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CONSTRUCTION, CONSTRUCTION MACHINERY AND BUILDING MATERIALS

INCREASING THE EFFECTIVENESS OF CAPITAL INVESTMENTS

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 5, May 79 pp 25-33

[Article in two parts by G. Murzagaliyev, manager of the Kazakh Office of USSR Stroybank and M. Geydarov, Candidate of Economic Sciences and chief of the Administration of Engineering-Technical Control for the Kazakh Republic Office of USSR Gosbank: "Raising the Effectiveness of Capital Investments"]

[Text] In the articles presented below, authors Murzagaliyev and Geydarov raise questions on increasing the effectiveness of capital investments in the national economy, commencing with planning and financing and ending with the construction of various projects. In addition, they offer specific proposals for correcting the shortcomings noted.

1. The Most Important Stage of Planning (G. Murzagaliyev)

The CC CPSU and the Soviet Government, during all stages in their development, have devoted and continue to devote a great amount of attention to improving planning-estimates work. Such attention is fully justified. Indeed, not only construction effectiveness but also the effectiveness in developing the entire economy as a whole are dependent upon progressive solutions being embodied in the plans.

A great deal of work has already been carried out throughout the country and republic in connection with implementing improvements in planning. For example, such works of our Kazakh architects as the Palace imeni Lenin in Alma-Ata, the unique Medeo Ice Sports Complex and also the architectural ensemble in the city of Shevchenko have been awarded state prizes of the USSR. The prize of the USSR Council of Ministers was awarded to the city of Balkhash for its building plan. Other examples could be cited reflecting public recognition for the works of Kazakhstan architects and planners. These facts are all very gratifying.

But these are the best examples. The overall level of planning-estimates work is still lagging behind the requirements of the times.

Let us address ourselves to the question of supplying the republic's construction projects with planning documentation, projects that have already been included in the plan for capital construction. How is work proceeding in this area? Let us look at some statistics. In 1978, owing to a lack of complete and high quality planning-estimates documentation prior to July, it was impossible to arrange financing for 40 production and 27 residential housing projects, with a capital investment volume of more than 32 million rubles.

For the same reason and prior to August 1978, the bank was unable to open financing for three projects of Mintsvetmet [Ministry of Non-Ferrous Metallurgy] with an annual volume of 761,000 rubles (for example, documentation was not received in a timely and complete manner from the GPI [state planning institute] of Kazgiprotsvetmet [Kazakh State Institute for the Planning of Non-Ferrous Metallurgy Establishments] for two projects of the Leninogorsk Polymetallic Combine for 578,000 rubles). This served to disorganize the builders and installers from the very beginning.

The institutes of Stroybank [All-Union Bank for the Financing of Capital Investments] were unable to arrange financing for a number of other projects in a timely manner, since the customers and planning organizations were not prompt in coordinating the planning-estimates documentation with the contracting and sub-contracting organizations. In the majority of instances, the claims were valid. The opportunities for increased labor productivity in the construction and installation subunits were not taken into account, since the projects were not considered to be technological in nature by the executive agents and some of the plans were oriented directly towards large expenditures of non-mechanized and heavy labor.

Permit me to cite one example by way of confirmation. In the construction of a superphosphate plant at Dzhambul on 1 January 1978, financing was not provided for four projects (filling station, nitric acid storehouse, closed storehouse for pyrite and a furnace department). The reason -- failure to coordinate the project estimates with the sub-contracting installation organizations and the contractors.

Just as in the past, estimates work continues to be the weak link. During 3 years of the five-year plan, the estimated costs for 200 construction projects throughout the republic were revised. The overall cost was increased by 520 million rubles. In order to assimilate such an amount of capital investments, a ministry such as Mintyazhstroy [USSR Ministry of Construction of Heavy Industry Establishments] must work for an entire 6 month period. It is by no means surprising to learn that such serious errors in the planning of capital investments cause a chain reaction and disorganization in the work of enterprises -- suppliers, organs of logistical support and, in the final analysis, the builders and installers at the construction sites.

Here is how the estimated cost for an armature plant at Semipalatinsk changed (the customer was USSR Minkhimmash [Ministry of Chemical and

Petroleum Machine Building] and the general designer -- GPI of GiproNIIkhimmash). In 1964 it amounted to 19.4 million rubles, in 1969 -- 20.9, in 1973 -- 28.7, in 1978 -- 33.2 million rubles. As you can see, the spread is impressive.

At the moment of the last confirmation of the plan and the estimated cost of construction, the normative period for erecting the plant (3 years) had been exceeded by 11 years. Thus, how is it possible to even discuss the effectiveness of capital investments under such conditions?

As a result of poorly executed surveys carried out by the Kazmekhanobr Institute of the left bank of a canal for storm and thaw waters at the Leninogorsk Polymetallic Combine, corrections had to be introduced into the plan and this resulted in the expenditure of 2 million additional rubles.

The planning-estimates documentation for bunkers and tunnels of the Heavy Suspension Department at the Tishinskiy Mine of the Leninogorsk Polymetallic Combine in Vostochno-Kazakhstanskaya Oblast had to be revised repeatedly. As a result of work not completed by the Kazgiprotsvetmet Institute, the increase in estimated cost amounted to 981,000 rubles and for the Bystrushinskiy Tailing Dump of the Leninogorsk Polymetallic Combine -- 1.1 million rubles.

The increase in the estimated cost for these two projects was the result of errors on the part of the planning and research organizations and also poor quality inspection by experts of Mintsvetmet for the Kazakh SSR.

Sroybank provided financing for a number of projects in the absence of approved and complete planning-estimates documentation and on a favorable basis. In 1978, preparatory work carried out at the Vasil'kovskiy GOK [mining and concentrate combine] of Mintsvetmet for the Kazakh SSR in Kokchetavskaya Oblast and the construction of projects at the Pavlodar Tractor Plant was financed on the basis of plans and estimates for the individual projects. This method was employed as an extreme measure owing to the fact that the plans were not ready and this cannot be viewed as a normal arrangement.

Meanwhile, the workers attached to a majority of the ministries and departments are not drawing the proper conclusions from such incidents. The faulty practice of including in a plan construction projects and other projects which are not supported by planning-estimates documentation is continuing.

For example, on 1 September 1978 the draft plan for capital construction during 1979 once again included 275 new construction jobs and projects (for the amount of 234 million rubles) for which the required documentation was not available. Permit me to cite several examples. Mintsvetmet for the Kazakh SSR "included" in the draft plan for capital construction during

1979 the modernization of facilities at a titanium-magnesium combine in Ust'-Kamenogorsk, at an estimated cost of 35.6 million rubles; the annual volume of construction-installation work was 4.3 million rubles and neither a technical plan nor project estimates were available.

The local soviets added 75 construction jobs and projects valued at 42 million rubles (14.3 percent of the annual volume of construction-installation work for 1979) to the 1979 plan without documentation. In Alma-Atinskaya Oblast there are 30 such construction projects. The work volume -- 25.4 million rubles, or 39 percent of the annual volume. For Severo-Kazakhstanskaya Oblast, these figures were 18, 3.3 million rubles and 39.8 percent and in Chirchenskaya Oblast -- 16, 9.3 million rubles and 40.6 percent. More than 40 percent of the construction projects were included in the overall plan without draft plans. Thus, how is it possible to discuss valid planning?

An important feature of the 1979 plan for construction work is the fact that more than one half of all capital investments are being used for the completion of underway construction jobs and projects. But even these projects and jobs have not been fully supported in terms of estimates and blueprints. According to the situation on 1 September 1978, no technical documentation was available for 21 carry-over construction projects representing a work volume of 39 million rubles.

The list of customers included Kazmintsvetmet and Kazminzhilkom/hoz. The latter department did not furnish plans for 1979 for a construction project carried over from past years (a water line at Aktyubinsk, estimated cost 2 million rubles and annual volume of construction-installation work 0.5 million rubles).

Even more vexing is the fact that the planning documentation had actually been developed and made available by the planning organizations and still it was not used. Moreover the amount of documentation for individual ministries and departments at times exceeds the annual requirements when taken as a whole, however the nomenclature by no means conforms with the structure of the projects included in the plan. As a result, a large portion of the resources turns out to be worthless.

Thus, on 1 January 1978, the balances for 22 ministries and departments in the Kazakh SSR reflected planning-estimates documentation for 1,830 construction projects representing an overall estimated cost of construction of 2.26 billion rubles, the development of which cost more than 31 million rubles. Moreover the documentation for 424 construction projects representing an estimated cost of 584 million rubles and expenses of 6 million rubles for developing the documentation turned out to be worthless.

The plan for a quill-pen factory of Kazminmestprom at Taldy-Kurgan, developed in 1972, was not used for a period of 5 years. It became obsolete.

At the same time, the planning expenses amounted to 37,000 rubles. In 1977 the ministry allocated 16,000 additional rubles for developing the documentation. However the planning for this project was not completed prior to October 1978 and 12,000 additional rubles are now required in order to complete it.

In accordance with a task of Minhyt for the Kazakh SSR, the KazgiproNIByt Institute developed planning-estimates documentation in 1967-1968 for the construction at Ust'-Kamenogorsk of a professional technical school and a factory for the repair and manufacture of furniture. These construction projects were not included in the plan for capital construction. The plans for which 29,000 rubles had been spent became obsolete. In 1977 the ministry repeatedly issued a task to KazgiproNIByt to develop plans for the construction projects mentioned above. The new expenses -- 41,000 rubles.

Considerable funds were expended from 1971 to 1973 at Kazminavtodor for planning a plant for the repair of road-construction equipment at Tselinograd. The plans called for construction to be started in 1974 and to be completed in 1975. The building of the enterprise was not started in 1974 and the plan became obsolete. In 1977 the ministry allocated 32,000 rubles for reprocessing the plan, with construction to start in 1978. However the plan was not corrected completely in 1977 and in 1978 30,000 additional rubles were allocated. Thus the planning period was prolonged from 3 to 8 years and the planning expenses -- doubled.

In July 1974, Miniegprom (Ministry of the Light Industry) for the Kazakh SSR approved a task, in the amount of 64,000 rubles, for developing a technical working plan and producing blueprints for a non-fabric materials department at the Kargala Clothing Combine in Alma-Atinskaya Oblast. The construction of the department is not being planned owing to the limit placed upon the allocation of capital investments. These expenses may also become worthless. Such management can hardly be viewed as being zealous!

The ministries, departments and oblast executive committees are still not exercising proper control over the efficient use of resources allocated for planning. The materials used for writing off worthless expenditures are prepared many years later. The individuals responsible for issuing unsound tasks are not longer working at their former positions and thus they remain unpunished. Such practice causes great harm to the state.

In the interest of preventing such incidents from occurring, the responsibility of customers for using planning-estimates documentation prepared in accordance with their orders should be raised. It is obvious that fines and penalties should be imposed on those individuals who issued tasks for the planning of projects, the construction of which was not carried out during the periods planned.

In our opinion, the tasks for planning newly begun construction projects should be coordinated with the organs of expertise of the ministries and

departments. Perhaps it would be feasible to establish an even higher level for approving these tasks.

The planning for new industrial construction projects should commence only in the presence of technical-economic justifications, the preparation of which was necessarily based upon the plans for the development and disposition of the branches.

A constant shortcoming of planning-estimates documentation, considering the excessive growth in expenses for developing such documentation is the poor relationship between current planning and construction. The increasing volume of left over unused documentation in unfinished construction reveals that its nomenclature structure differs substantially from the long range plans for capital construction.

In order to improve the use of funds allocated for planning-research work, it is necessary to define more clearly the requirements for planning-estimates documentation when preparing the plans for capital construction and to coordinate these requirements (in accordance with the volumes and nomenclature for the title lists for current planning and also planning for future years) with the plans for capital investments.

In addition, changes must be implemented in the methods employed for preparing the thematic plans for planning organizations, such that they serve as strong planning and not accounting documents for planning work. This shortcoming must be eliminated with the aid of continuous two-year planning for planning-research work.

The rational use of resources for the carrying out of planning-research work can also be achieved by converting over to the supplying of continuous long-term credit to planning organizations for the full estimated cost of the planning work.

The Kazstroybank experiment of extending long-term credit to the Kazgipromishcheprom and Kazgorstroyproyekt institutes, launched in 1977, raised the interest of these institutes with regard to preparing high quality plans and issuing them in a timely manner to their customers. Thus Kazstroybank planned to expand this experiment during 1979.

The quality of planning-estimates documentation predetermines to a large degree the stability of the plan and the planning organization for construction-installation work. Measures have been undertaken throughout the republic aimed at organizing and strengthening the expert subunits. At the present time, 38 subunits for examining plans and estimates have been organized, without the participation of Gosstroy for the Kazakh SSR, in the republic ministries and departments, including seven union-republic ministries and departments, the capital investments of which are allocated by the republic's Council of Ministers, and also in the oblast executive committees and the Alma-Ata Municipal Executive Committee.

However, in the case of many construction projects, an estimate still does not serve as an unchanging document throughout the entire period of construction. Sampling checks alone on the quality of the documentation, carried out by institutes of Kazstroybank during 3 years of the Tenth Five-Year Plan, revealed that the estimated cost of construction had been overstated by more than 160 million rubles. This underscores the fact that the committee of experts often carries out its work on the basis of a narrow departmental viewpoint, the plans are approved without taking into account the shortcomings embodied in them and the planning norms are violated in the absence of a thorough analysis of the technical-economic indices.

A need exists for intensifying non-departmental control if further improvements are to be realized in the examination of plans and estimates and in their overall quality. The proposal by Gosstroy for the Kazakh SSR concerning the creation (within Gosstroy) of a special economic accountability republic organ of expertise is considered to be feasible.

Under modern conditions, one unforgiveable extravagance is that of including a construction project in a plan, the construction of which has not been validated as being highly efficient. Planning must be based upon the latest achievements in international science and engineering. Any deviation from these requirements leads to an increase in the cost of construction, an extension of the investment period and to a reduction in the effectiveness of capital investments and this beyond any doubt is unacceptable.

However the creation of a complete plan represents just the beginning of the work. The principal task is that of carrying out the project fully, without deviations and as quickly as possible. Unfortunately, many examples could be cited showing how the leaders of ministries and departments -- customers -- without stopping to think, "reduce" the estimated cost of construction and eliminate equipment, projects and even entire technological lines. The initiators of such "surgical operations" are aware that normal operations are impossible at such enterprises, as is also their ability to achieve their planned capability on schedule. But the desire to "force" a construction project into being included in a capital construction plan quite often prevails. The specialists attached to the planning organizations simply carry out the orders of the customer. They do so even though they are aware that the quality of the plan is lowered to a serious degree as a result of such "amputation."

Here is an example by way of confirmation.

The plan for the construction of a plant for shaped glass in Alma-Ata, with a capability of 360 million square meters annually, had an estimated cost of 3.8 million rubles. In order to facilitate its being "added" to the plan, Kazminpromstroymaterialov approved an estimate for 2.9 million rubles, having eliminated one of two technological lines from the plan. In the process, was any thought given to the effectiveness of the capital

investments? It is doubtful. Indeed, such a decision would lead to serious consequences: the expenses per ruble of output would increase by 20 percent, production profitability would be lowered by a factor of 2.5 and the reimbursement period would be increased from 6 to 13 years. Upon the insistence of bank workers, this project was eliminated from the capital construction plan for 1976.

One of the key tasks of economic activity during this modern stage is that of making thrifty and rational use of everything at our disposal and all that is being produced by our industry. First of all, we have in mind the need for economizing in the use of metal.

However, many planning organizations and expert organs are failing to take into account the need for economizing in the use of the various structures and they are tolerating deviations from the technical rules and norms for the thrifty use of metal.

During 3 years of the five-year Plan, institutes of Stroybank uncovered violations in 386 plans representing an overexpenditure of more than 33,000 tons of metal. Upon insistence by the bank, changes were introduced into the plans which resulted in a savings of approximately 18,000 tons of metal. Where did these thousands of tons of metal come from? Specialists at the Kazakh Branch of Gidrorobroyekt, for example, planned a pressure water line for the Tash-Utkul'skiy Pond Economy of Kazminrykhkhov that was 5,376 linear meters long and made out of steel pipe, Almaatagiprogor -- two 16-story apartment buildings in Alma-Ata made using steel structures, with the framework weighing 2,000 tons. The GPI for Kazgorstroyproyekt developed planning-estimate documentation for the superstructure of the fifth floor of the Yunost' Dormitory of the Alma-Ata Housing Construction Combine, with use being made of steel structures weighing 42 tons.

Many thousands of tons of rolled metal and pipe were immobilized in the form of unfinished construction, uninstalled equipment and heavy structures.

The leaders of ministries and departments should deal very strictly with those who expend excessive amounts of metal and other materials. In addition, an entire system of measures should be developed aimed at sharply reducing material expenditures at all stages of construction: in the development of plans, production of structures and equipment and carrying out of construction-installation work. These measures must address themselves to those problems concerned with the introduction into practice of the latest scientific achievements, implementing improvements in planning and achieving more skilful use of economic levers. In the case of a tremendous scope of construction work, even humble percentages for material expenditures will result in savings of many millions of rubles.

Life has shown that this task is fully realistic. In carrying out the tasks for lowering the estimated cost of construction by 3-5 percent, as called

for in the "Principal Trends for Developing the National Economy of the USSR During the 1976-1980 Period," the Republic's ministries and departments, during just 2 years of the Tenth Five-Year Plan, succeeded in lowering the estimated cost of construction by 436 million rubles, or by 3.04 percent. This reduction was achieved for the most part owing to the use of more rational planning solutions, the elimination of surplus expenditures from the plans, an expansion in completely prefabricated construction work and increased industrialization of operations.

At the same time, the work concerned with lowering the estimated cost of projects is being prolonged in some ministries and departments. For example, the planning-estimates documentation for the construction of Vostokmashzavod at Ust'-Kamenogorsk has still not been reviewed in USSR Mintsvetmet.

For the purpose of carrying out the tasks for lowering the estimated cost of construction during the 1976-1980 period, USSR Gosplan and Gosstroy established a system calling upon the USSR ministries and departments and also the councils of ministers for the union republics to review the planning-estimates documentation and they also defined the trends to be followed in lowering the estimated cost of construction. However, experience reveals that this system is still not being followed by certain ministries today.

Thus a check carried out on the construction of a preventive maintenance building for 350 motor vehicles in the settlement of Kurgal'dzhino (Ministry of Motor Transport for the Kazakh SSR) disclosed an artificial lowering of the estimated cost of construction by 200,000 rubles. The documentation was developed by KazNIPIAT [Kazakh Scientific Research and Planning Institute of Automobile Transportation] and approved in the amount of 499,800 rubles by the Tselinograd Freight Administration of Minavtotrans [Ministry of Motor Transport] for the Kazakh SSR. However, a number of items were not taken into account in the estimate: the cost of the technological equipment (150,000 rubles), external sewerage systems, water line, heat supply, external electric lighting, construction of a transformer substation in the amount of 30,000 rubles and the cost of civic improvements (roads, sidewalks and plantings) -- 20,000 rubles.

As a result of the understated cost of planning, the placing in operation of the preventive maintenance building during the fourth quarter could not be realized and this led to the immobilization of capital investments. Upon bank insistence, the cost of construction was corrected and defined in the amount of 714,000 rubles.

A substantial reserve for raising the economic effectiveness of capital investments is that of consolidating the enterprises being planned in industrial centers, regardless of their departmental subordination. This produces a savings in capital investments amounting to 3-5 percent of the cost of construction and a great savings in resources during the operation of the engineering networks and installations. Such complexes have been created and are being created in many cities throughout the republic.

During the past few years the Kazpromstroynilproyekt Territorial Planning Institute, jointly with the planning institutes of branch ministries, developed more than 27 models of general plans for industrial centers bringing together more than 200 enterprises, at an estimated cost of more than 3 million rubles (of this number, only 16 industrial centers were approved). Unfortunately, notwithstanding the effort that has gone into this work, the national economy is still unable to realize even one half of the benefits embodied in the advantages of group placement of production operations.

At the present time, the plans for only five industrial centers have been realized; the remaining ones are in a stage of construction or repair, since the composition of the industrial centers changes frequently and the normal periods for erecting the enterprises are not being adhered to.

For example, the placing in operation of enterprises belonging to the Southwestern Industrial Center in Karaganda was planned in 1975. But the republic's Ministry of Heavy Construction and Kazglavgaz did not allocate funds for the construction of their enterprises and the general plan had to be corrected in 1976. The use of capital investments for projects included in the improved general estimate, in late June 1978, amounted to 1.6 million rubles (or 9.8 percent of the overall estimated cost for the industrial center) and construction had not yet commenced on the center's installations.

The installations of the Maykudukskiy Industrial Center (Karaganda), the Southern Industrial Center (Ust'-Kamenogorsk) and those in many other industrial centers throughout the republic are being erected in an unsatisfactory manner.

An analysis of the causes of these problems reveals that they developed as a result of weaknesses in the economic structure and inefficient solutions for organizational and methodological problems by the appropriate parties, who were unable to introduce timely corrections into the normative statutes, taking into account the new and progressive phenomena in the sphere of production.

There are still other reserves which affect improvements in the effectiveness of capital investments. First of all, this applies to the introduction into construction operations of the results of scientific studies and planning-experimental work.

A strong reserve for improving the organization of planning work is that of making greater use of the expertise offered by specialists attached to scientific research institutes, customer-ministries and construction ministries.

Here importance is attached to creating a system of economic interest, on the part of the ministries and departments, in searching for more effective solutions for the construction being planned.

Experience is available in this regard. A bureau for expertise and for improving planning solutions has been created in Glavzapadstroy. When a cost reduction is achieved, a portion of the funds (30 percent of the savings) is delivered to the state and the remaining portion -- to the construction trust. Of this amount, the trust issues compensation through the customer for the replanning expenses borne by the institute, it issues incentives to its workers and the bureau apparatus and, even more important, the savings (roughly one half of the overall amount) is used for erecting housing, childrens' institutes and public health facilities of the main administrative board. The result of the bureau's work is as follows: a savings of an average of one out of every 10 million rubles is realized for the state.

One economic lever for lowering the estimated cost of construction is that of raising the responsibility of the planning organizations.

In accordance with the existing statute, if a planning organization is guilty of tolerating an increase in the estimated cost, the leader of the planning organization is deprived of the bonus issued for quarterly work results.

On the basis of a number of checks carried out, it has been established that many planning organizations, in violation of the instruction handed down by USSR Gosstroy, are issuing incomplete and unfinished planning-estimates documentation, while the customers are having to accept and pay the full cost for it. In the interest of intensifying control over the completeness and full development of the documentation and in conformity with the existing statute, the institutes of the bank in such instances will retain certain monetary amounts from those planning organizations which developed the documentation.

The institutes of the bank are authorized to evaluate planning incompleteness as accounting distortions and to cancel the awarding of all types of bonuses, regardless of the payment source, to the leading workers of planning organizations for a period of up to 1 year. Our Stroybank institutes are striving to make full use of those economic levers which promote improvements in the quality of planning-estimates documentation. They are aware that further improvements in planning-estimates work will promote an increase in the effectiveness of capital construction and in the successful carrying out of the planned tasks for the Tenth Five-Year Plan.

2. Miscalculations Lead To Losses (M. Geydarov)

More than 13 billion rubles were allocated for developing the logistical base for agriculture (including kolkhozes) throughout the republic during the current five-year plan. This figure indicates that the logistical base for agriculture is being developed on a large scale and in a confident manner.

At the same time and in addition to noting the successes achieved, our party is also focusing serious attention on the shortcomings observed.

In this regard, member of the Politburo of the CC CPSU and First Secretary of the Central Committee of the Communist Party of Kazakhstan, Comrade D.A. Konev, stated: "Complete order must be restored at each rural construction project. This is particularly important in view of the fact that the scale of work is increasing substantially during this new five-year plan. Life persistently demands that we build more, better and cheaper and that in the next few years we solve the principal problems associated with converting agricultural production over to an industrial basis."

How is work proceeding in connection with solving this important national economic problem in Kazakhstan? The results of control-economic work carried out by the republic office of Gosbank and its institutes underscore the presence of serious shortcomings in the use of capital investments during the planning, projecting and financing stages for rural construction. Let us examine these successively.

As is known, the principal requirement with regard to the national economic plan is that of a comprehensive and valid correlation of its sections and indices.

Meanwhile, in the planning of capital investments in rural construction for the republic, the required correlation of monetary and material resources is still not being achieved in many instances and the normal periods for the duration of construction are not being taken into account. The result -- dispersion of capital investments, "immobilization" of resources and, quite often, large unproductive expenditures.

The indices for the economic effectiveness of capital investments are lowered sharply.

The data of intra-building title lists (this is one of the principal planning documents of an annual plan) for construction projects of Kazminsel'khos reveals that many carry-over projects remain not included in the plan each year, projects on which large amounts of funds have already been spent. For example, during 1978 alone and for sovkhoses throughout the republic, 244 carry-over projects representing an estimated cost of 20.6 million rubles were not included in the plan, although 10.7 million rubles had already been expended for erecting them, that is, practically one half of the funds. Three hundred and nine underway projects representing an estimated cost of more than 59 million rubles were not provided with the funds required for their completion. Meanwhile, slightly more than 15 million rubles were required for this purpose.

The problem was not so much that funds were not generally available. Indeed, at the very same time the ministry was planning the construction of 1,469 newly begun projects representing an overall cost of 733.7 million rubles.

Moreover, a tendency "only to begin" was manifested here. Today, more than 2,000 projects (representing an estimated cost of 122.4 million rubles)

have not been supplied with the funds required for finishing them, in conformity with the normal construction schedules.

Workers responsible for construction matters in Kazminsel'khoz are obviously aware that such planning inevitably leads to a dispersion of resources, an increase in the duration and growth in unfinished construction, it adversely influences the effectiveness of work carried out by the construction-installation organizations and quite often it brings about unproductive expenditures.

The results of such practice are not comforting. On 1 January 1978, the volume of unfinished construction at Kazminsel'khoz amounted to 497 million rubles. This exceeded the normal amount to a considerable degree and for sovkhoses in Kustanayskaya Oblast the volume of unfinished construction rose to 89 million rubles. This was 94 percent of the actual volumes of capital investments placed in operation during the year.

For sovkhoses, the unfinished construction included more than 130 carry-over projects on which 6.5 million rubles of expenditures had already been spent, projects which were not included in the plan. In the case of 48 of these projects, construction had been terminated owing to the inadvisability of continuing it. These were clearly unproductive millions.

The following data testifies to the presence of serious shortcomings during the capital investment planning stage. During the period given to arranging financing for 1978 construction, Minsel'khoz had to agree with the proposals made by the institutes of Gosbank with regard to excluding more than 1,500 newly begun projects (representing an overall estimated cost in excess of 40 million rubles and an annual capital investment volume of 22.5 million rubles) from the plan. They had to be classified as unrealistic. The sound reduction in the number of projects made it possible to achieve a noticeable concentration of capital investments and to increase the placing in operation of fixed capital by 27 million rubles, compared to the established task, with no additional appropriations required for this purpose.

Nor is the situation any better with regard to the planning of capital investments at kolkhozes throughout the republic, where there are more than 800 projects with overdue construction schedules. In 1978, against a requirement calling for 67 million rubles for completing construction work on carry-over projects, only 45 million rubles were allocated. As a result, 240 projects fell into the column entitled "Unfinished Construction." At the same time, the construction of 1,700 new projects was being planned. The practice of commencing and then not completing projects has led to an increasing volume of unfinished construction valued at up to 150 million rubles. Almost one half of this work involves projects on which the schedules for the completion of work are overdue.

Over a period of 6 years at the 40 Let Oktyabrya Kolkhoz in Dzhambul'skaya Oblast, only one half of the work required for building a duck farm was

carried out. The appropriations allocated for this project in 1978 amounted to one tenth of the total estimated cost, that is, 200,000 rubles in all. Thus it is not at all difficult to reason that, as a result of such planning, the construction of this project will require still another 5 years. More than two five-year plans for one duck farm! Can this be so! Commercial milk farm projects have been under construction for more than 7 years at the Pobeda and Oktyabr' kolkhozes in Taldy-Kurganskaya Oblast. Under such conditions, how is it possible to discuss the effectiveness of capital investments? Such planning leads directly to inefficiency.

In connection with the mentioned shortcomings and violations of planning discipline in rural construction, guilt rests mainly with the leaders of the kolkhozes and sovkhoses, who on the basis of their service obligations are required to participate in the work of composing and approving the intra-building title lists. The position being taken by workers attached to the rayon and oblast agricultural administrations is rather perplexing. The Gosbank institutes inform them on a regular basis concerning the problems in rural construction and yet the situation does not change.

In discussing the need for raising the effectiveness of capital investments in rural construction, one extremely important specific feature must not be overlooked. The overwhelming majority of projects in the rural areas are erected and financed based upon plans and estimates having normal construction periods of up to 1 year. Thus the availability, for such construction projects, of long-range construction plans for the year following the one being planned is a vital necessity. Yet such plans are not available. And this inhibits to a considerable degree the preparation and issuing of planning-estimates documentation by the customer. Hence the consequences: delayed arrangements for bank financing, inability to plan the work of the construction-installation organizations in a timely manner and, it follows, to make efficient use of their productive capabilities.

The elimination of this type of shortcomings will undoubtedly promote improvements in the economic effectiveness of capital investments. The composition, together with the intra-building title lists for the year planned, of similar lists for the year following the one being planned serves as a type of analogue for the Orlovskiy two years of continuous construction, as approved by the CC CPSU taking into account the specific nature of rural construction.

Continuous rural construction could serve as a fine basis for the financing of planning-research work, in strict conformity with the construction projects being planned. It could reduce to a minimum the large amounts of unproductive expenditures, it could aid in ensuring that the rural construction projects are supplied with technical documentation in a timely manner and it could create a number of other favorable conditions for both the customer and the contractor.

Unfortunately, we still do not have this. Moreover, the facts testify to the presence of great losses in state funds in the form of unproductive

expenditures owing to discrepancies between the orders for the preparation of planning estimates and the actual requirements. During the past 3 years (1976-1978), for this reason alone, 2.1 million rubles that had been expended for the preparation of planning estimates for construction that has not been started nor will be started was presented for writing off at Kazminsel'khoz. At the Karagandinskaya Oblast Agricultural Administration alone, the expenditures listed on the balance for unfinished production, for 630,000 rubles of planning-research work, should be evaluated as a direct loss to the state, since the technical documentation developed for this amount has become obsolete and is no longer suitable for use. It is apparent that the specialists responsible for construction at Kazminsel'khoz have still not learned how to handle state money in a thrifty manner.

Project-planning documentation plays an exceptionally important role in bringing about improvements in the technical level for construction and civic improvements in the rural areas. It makes it possible to achieve a more rational disposition for projects, carry out construction-installation operations on a more intelligent and scientific basis and to employ capital investments more effectively. However, the results of inspections have revealed that proper attention is still not being given to this problem. Of 5,830 future rural settlements for the republic, approved building plans are lacking for 1,692 of them at the present time, or almost 30 percent of the overall number. In the case of many settlements developed prior to 1965, the building plans have clearly become obsolete and require radical reworking in connection with the appearance of new and progressive norms for agricultural economics.

Experimental construction must play an important role with regard to improving technical progress and the effectiveness of capital investments. However, Minsel'khoz and also the republic's agricultural planning institutes have accomplished very little in this regard. Meanwhile, it is known that all types of construction and particularly experimental construction produce the greatest results only when the work is carried out on a rapid basis. If this is not the case, then the experiment generally speaking may lose all of its practical value.

It is known that equipment represents an active part of the fixed capital in the structure of capital investments. Hence, where the intention is to intensify public production and raise the effectiveness of capital investments in every possible way, priority attention must be given to making rational use of the active part (that is, equipment). Unfortunately, another picture is often observed. Permit me to cite some examples. As early as 1976 the Iliyskiy Sovkhoz in Alma-Atinskaya Oblast accepted a Sigma-500 type sprinkling unit from the oblast land reclamation and water economy. And the equipment not only has still not been placed in use, but in fact it is no longer suitable for use. The probable outcome -- unproductive expenditures and a clear loss to the state.

Equipment obtained back in 1975 at the Tobacco Sovkhoz imeni 50-Letiya SSSR in Alma-Atinskaya Oblast for the drying of tobacco is still not being

used and is losing its usefulness. Resources valued at 68,000 rubles have for all practical purposes become immobilized. Imported equipment at the Kommunizm Zholy Sovkhoz in Turgayskaya Oblast (for 163,000 rubles) and the Terenozek Sovkhoz in Kzyl-Ordinskaya Oblast (for 38,200 rubles) is not being used. Air conditioners procured 7 years ago for the Kzyl-Orda Poultry Factory have still not been installed and are considered to be unfinished construction.

Beyond any doubt, the elimination of the mentioned shortcomings represents a considerable reserve for raising the effectiveness of capital investments.

Today almost one half of the construction-installation work being carried out at sovkhoses throughout the republic is being accomplished using the forces and resources of the farms themselves (the so-called economic method). The engineering-economic control materials of Gosbank institutes point to the presence of serious shortcomings, and at times crude violations of state and financial discipline, in construction operations carried out using this method.

Let us examine those questions concerned with use of the wage fund. The annual over-expenditure of this fund at Kazminsel'khoz is computed in hundreds of thousands of rubles and during some periods such expenditures amount to from 25 to 27 or more percent of the overall amount of the approved fund. Inspections have shown that included among the chief reasons for this situation are such crude violations as eyewash and unjustified overpayments.

At the Pobeda Sovkhoz in Yesil'skiy Rayon in Turgayskaya Oblast, for example, checks carried out on orders valued at 94,000 rubles revealed overestimates and illegal overpayments amounting to 31,037 rubles. In other words, one out of every three rubles paid out on the basis of such orders was not earned and yet it was included in the column entitled "wages." For example, for preparing walls for plastering, instead of 0.35 rubles per square meter based upon YeN [uniform norms] and K [rates], 4.36 rubles were paid out when composing the orders, that is, the rates were arbitrarily inflated by a factor of 12. Towards this end, false documents were composed for the manual preparation of crushed stone in the amount of 1,486 rubles and work that was actually not carried out, in connection with the trimming of irregularities in the walls, was added in the amount of 1,310 square meters -- for 2,541 rubles. Approximately 11,649 rubles were paid out unjustifiably on a job contract plus bonus basis.

Similar violations of financial discipline in connection with computing wages for construction carried out using the economic method were observed taking place at the Tastinskiy Sovkhoz in Turgayskaya Oblast (for 32,100 rubles), Gornyy Sovkhoz in Tselinogradskaya Oblast (for 12,200 rubles, the Sovkhoz imeni K. Marks in this same oblast (for 15,900 rubles and so forth.

Large overpayments from the wage fund encourage the vicious practice of carrying out non-planned and unwarranted construction of projects that have

not been accepted by the bank for financing, and also owing to numerous alterations and poor production work tolerated, etc. Here are a few obvious examples. In Kustanayskaya Oblast alone, during the first quarter of 1973, an overexpenditure of the wage fund amounting to 100,000 rubles was tolerated for 46 sovkhoses, during the second quarter -- 58 sovkhoses for 390,000 rubles, the third quarter -- 51 sovkhoses for 381,000 rubles and so forth. At the Sovkhoz imeni Michurin in Kustanayskiy Rayon, for example, owing to the erection of five non-planned projects, violations of official discipline and expenditures for correcting defects on projects completed earlier resulted in wage overexpenditures amounting to more than 10,000 rubles. Similar violations are taking place in many sovkhoses in Severo-Kazakhstanskaya, Kokchetavskaya, Karagandinskaya and other oblasts.

At the Vozvyshenskiy sovkhos in Severo-Kazakhstanskaya Oblast, nine different projects representing an overall cost of 539,900 rubles were illegally built over and above the plan, at the Sovetskiy Sovkhoz in this same oblast -- 16 projects for 791,000 rubles and at the Sovkhoz imeni Chapayev in Guryevskaya Oblast -- an office was illegally built in the raion center instead of a sovkhos dormitory facility. In Dzhezkazganskaya Oblast, the leaders of the Tselinnyy, imeni Seyfullin, Bidaikskiy and Druzhba sovkhoses built a young pioneer camp without a plan and in the process they illegally expended 72,500 rubles of state funds. Such freedom in the handling of state resources results from a low sense of responsibility on the part of a number of officials and complete impunity for the violators in accordance with the established system.

In the interest of eradicating and preventing crude violations of planning discipline in the future, it is our opinion that it would be economically sound and legally justified to categorize the expenditures for non-planned construction work, as revealed by the financing institutes of Gosbank, as additions with use being made of the appropriate financial sanctions and disciplinary measures and with the specific guilty parties being held personally responsible.

The overstating of wages in orders and the distorting of state planning discipline are by no means special problems. This practice represents a direct means for violating a most important condition for a socialist economy -- the need for greater growth in labor productivity than in average wages.

As you can see, this is a negative tendency. Such a "difference" between growth in wages and growth in labor productivity should long ago have aroused serious concern among those Minister'khoz workers responsible for construction. However, the dynamics of the indices indicate otherwise.

A strong reserve for raising the effectiveness of capital investments is that of eliminating the continuing vicious practice of adding to the volumes and overstating the cost of construction-installation work carried out.

At the Sovkhoz imeni Furmanov in Zhandalinskiy Rayon of Turgayskaya Oblast alone, a control measurement revealed an additional amount of 98,000 rubles for two cowbarns. This additional amount was for: a fire reservoir for 6,110 rubles (it was not built and the money was obtained on the basis of a false document), installation of floors -- for 12,445 rubles, a concrete cesspool -- 1,840 rubles, a water refuse collector -- 1,920 rubles, civic improvements -- 4,220 rubles, reinforced concrete floor for 16,355 rubles and other work. Although 14 asphalt sites were planned at the Komsomol'skiy Sovkhoz in Yesil'skiy Rayon, only four were actually built. As a result of direct fraud, the state was deprived of 101,188 rubles.

The position taken by certain leaders of rayon executive committees has been rather startling. Instead of defending the interests of the state, they participated themselves in questionable operations. Permit me to cite some facts. On the basis of a decision handed down on 30 July 1978 by the Sarkandskiy Rayon Executive Committee in Taldy-Kurganskaya Oblast, a dormitory facility for 60 persons was accepted into operations at the Krasnyy Oktaybr' Sovkhoz with a grade of "good." Meanwhile, in addition to other crude violations of planning and planning-estimates discipline associated with this project, the situation on 30 January 1979 was such that there were 11,190 rubles worth of unfulfilled work or more than 27 percent of the complete estimated cost. Floors accounted for 40 percent of the unfinished work and sanitary engineering and finishing work, civic improvements and other types of work -- all unfinished. The documents of the state committee for the acceptance into operations of five dwellings at the Koktenkul'skiy Sovkhoz in Dzhezkazganskaya Oblast were approved by the Agadyrskiy Rayon Executive Committee. The amount of unfinished work at these projects ranged from 22 to 61 percent. Thus, for house No. 44 which was accepted (on paper) into operations, the actual work carried out amounted to only 9,543 rubles, although the estimated cost of the project was 24,530 rubles. Moreover, house No. 45 was placed in operation without a roof, floors and other main structural elements.

Special emphasis should be placed upon the fact that the negative consequences of overstating the volumes of construction-installation work carried out are reflected not only in the unwarranted use of state resources in accordance with the acceptance documents but also in many other violations of state and financial discipline.

It is our opinion that one effective measure for terminating this type of evil in rural construction is that of establishing a system calling for the guilty parties to pay the entire fine (or a definite portion thereof), based upon the results of the control measurements carried out. We are still being confronted by a paradoxical phenomenon: the fines for the additional amounts are not being paid by the specific guilty parties; these amounts are simply being written off the accounting and financial accounts. Thus, rather than by the officials themselves, the violations are being paid for by the organizations on the whole, that is, by the state in the final analysis.

An intensified thrift regime provides considerable reserves for raising the effectiveness of capital investments. However, the data obtained from random checks underscores the presence of serious shortcomings in accounting for and writing off construction materials at rural construction projects where the economic method is being employed. Each year the institutes of Gosbank disclose facts highlighting the unwarranted (over and above production norms) writing off of construction materials for amounts on the order of 350,000-370,000 rubles. At the Zarya Sovkhoz in Severo-Kazakhstanskaya Oblast, violations associated with the writing off of construction materials cost the state 5,500 rubles and at the Tselinnyy Sovkhoz in Arkalykskiy Rayon of Turgayskaya Oblast -- 4,300 rubles. Many more such examples could be cited.

All of these facts indicate that the use of capital investments in rural construction, particularly in those instances where use is being made of the economic method, still cannot be considered as rational in nature. There is no end of work in this area. On the basis of joint efforts by the planning, design, agricultural and financial-banking organs, every attempt must be made to uncover and terminate all violations in a more active manner, persistently search for, find and employ the required reserves and achieve situations wherein each ruble of capital investment produces the desired return. This is required in the decisions handed down during the July (1978) and November (1978) plenums of the CC CPSU.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

LATVIA'S PROBLEMS WITH TWO-YEAR CONSTRUCTION PLANNING TOLD

Riga KOMMUNIST SOVETSKOY LATVII in Russian No 5, May 79 pp 30-36

[Article by V. Chepurnenko, Deputy Manager of the Riga Large-Panel Housing-Construction Trust: "Develop the 'Eksperiment' Construction Program"]

[Text] Capital construction is an important sphere of the country's economy. State capital investment volume will exceed 116 billion rubles this year. In recent years alone more than 700 large modern enterprises have been built in the country. Our republic's builders have achieved no few positive results. Not only were a large number of important facilities for production purposes turned over for operation this year, but apartment houses with a total area of more than 1 million square meters, general-education schools, and facilities for public-health and cultural purposes were built. Nevertheless, as was noted at the Conference on Questions of Capital Construction that the CPSU Central Committee held in January, there are serious deficiencies in this field. They occur mainly because of the unsatisfactory organization of production and work at construction projects, inadequate responsibility of those charged with doing the job, planning miscalculations, the continuing practice of dispersing capital investment, and lateness in outfitting construction projects that are due for startup with equipment and materials.

In addressing the November 1978 CPSU Central Committee Plenum, L. I. Brezhnev emphasized the necessity for radical improvement in capital construction affairs. The task is to reduce in every possible way the time taken to erect facilities, simultaneously raising the quality of work and reducing the expenditure of materials and labor resources, to put an end to the dispersion of funds and resources, and to eliminate uncompleted construction that is above the norm.

It must be noted that the economic reform that was executed in construction organizations in recent years has helped to solve these problems to a certain extent. It helped to improve capital construction planning and to raise the role of economic methods of control. However, in evaluating the situation critically, the builders cannot help but admit that the national economy's needs and the requirement for housing and for cultural and domestic-amenity facilities are not being met satisfactorily. Moreover, the economic results of the activity of some organizations of the republic's Ministry of Construction have worsened. Therefore, a pressing

need has arisen for further improvement of the economic reform in construction operations and for an expansion of its sphere of influence. A set of measures that received the tentative name, "Eksperiment," has become the action program in this domain for Latvia's builders. The purpose of the program is to convert all Latvian SSR Ministry of Construction subunits to self-support with the simultaneous improvement of economic control levers. Thus, using the principles of the new system of planning and economic incentives for production, Eksperiment was called upon to provide for a rise in construction effectiveness and to aim all collectives at achieving higher final work results. A similar experiment had been conducted at the start of the five-year plan in the Belorussian Ministry of Industrial Construction system (hence its name, the "Belorusskiy Eksperiment"). It is being developed successfully, bringing positive results, and it has been recommended for wide introduction.

What is there specifically new that the Eksperiment introduces into the work of construction organizations? First of all, the evaluation of the builders' activity is changed. This will be performed according to the final results--the introduction into operation of capacity and of facilities, the construction commodity output, and the increase in labor productivity. All this undoubtedly will stimulate the achievement of higher final results and provide for a combining of the interests of the builders with the satisfaction of social requirements in the results of their labor.

An important feature of the behavior of the main indicators is their close interaction, which is aimed at speeding up the introduction of facilities into operation. The "construction commodity output-introduction" chain will determine all the other results of construction organization activity: profit, finances, and economic incentives. Everything depends upon the turnover of finished jobs.

The major significance of successful introduction of the Eksperiment program in our republic's environment raises no doubt. This is why it is important to publicize the various problems upon whose solution the success of the whole experiment will greatly depend. In essence, it is based upon experience in economic accountability of individual subdivisions of the ministry. Their experience will enable a correct strategy for introducing the program everywhere to be worked out correctly. Thus, back at the start of the Ninth Five-Year Plan the Riga Large-Panel Housing-Construction Trust was the first in the ministry's system to be converted to the new terms. It is performing the integrated construction of housing in Riga's rayons, erecting almost half of the housing being built by the ministry. The achievements of the trust's collective can be viewed as positive results for the reform. In 3 years of the Tenth Five-Year Plan housing with a useful area of more than 680,000 square meters were built. Schools for 8,500 students, 9 kindergartens seating 2,500, a polyclinic for 2,400 patients per shift, and shopping centers and other facilities were turned over for operation. The amount of construction and installing work carried out in comparison with that same period of the previous five-year plan increased by 18 percent, realization volume by 12 percent.

Economic accountability at the lower levels is of great importance in raising construction effectiveness. Taking into account the specifics of flow-line construction, based upon the experience of N. Zlobin's brigade, the trust developed and introduced the group brigade contract, which has received the name "job" contract. Its main feature consists in improvement of the system for evaluating and motivating highly productive labor. New evaluating indices of brigade activity have been used: a reduction in the operating cycle and of the rate of labor productivity growth in comparison with growth of the average wage. Thus the wage system encourages a reduction in the duration of the various types of operation that each brigade carries out, and the new evaluating indicator of the job contract is the duration of the construction of the facility as a whole.

Right now all housing is being built by the job contract method. The average output per worker under the contract in 1978 was 138 rubles vs 115 rubles under the plan. The in-kind indices for labor per shift are high. This means that the system that the trust adopted is economically desirable and can be used widely later.

The job contract embraces all aspects of a collective's production and socio-economic life. It serves as a reliable base for organizing socialist competition, which is aimed at raising operating effectiveness.

The competition helped 24 brigades to complete ahead of time the tasks for labor-productivity growth in in-kind indices for the first 3 years of the five-year plan. The experiment in daily planning and computation of the results of the brigades' work that was conducted in 1978 during the construction of apartment houses in Mezhtsiyem Rayon can be considered a creative development of the contract. The Leningradskiy Rayon Party Committee helped the trust to generalize this experience and to establish on the basis of it a system for planning the work and for reporting its results, with a daily summing up of competition results. Since the start of the year the innovation has been spread throughout all the trust's organizations. Its final purpose is to provide for work without having any lagging organizations.

Nevertheless, there are no few deficiencies in the builders' work. The fact that in 1978 the collective did not cope with the startup program and did not fulfill the plan for construction and installing work is an alarming symptom. It would seem that an analysis of the factors that reduced construction effectiveness and affected the final results will help to overcome shortcomings during the experiment as a whole, since experience indicates that similar problems are basically characteristic also for the republic's other construction organizations.

Here are the main problems. Inadequate concern for developing the in-house production base ahead of time was telling; as a result, the increase in the amounts of construction and installing work slowed. Unfortunately, even today not everyone remembers that each ruble spent on developing the production base will be returned by 5 to 6 rubles in growth of operating program volume.

The improvement of capital construction is inseparably connected with more complete use of advanced experience. There are many reserves here also. For example, the potential for erecting housing directly from components as they arrive at the site, which would thus eliminate intermediate storage, still has not been exhausted.

Operations at construction sites are usually started without advance execution of the preparatory measures and the creation of normal operating and living conditions. Supply interruptions are frequent. Questions of improving the organizational structure are solved timidly. This structure does not meet modern requirements for developing housing construction in our city. Suggestions for increasing specialization of the trust's subunits and for raising housing-construction operations capacity still have not been realized. Because of the extraordinary number of different measures and inadequate help on the part of other organizations, such important innovations as an automated control system, dispatcher control and others are being introduced slowly. In brief, the organization of operations and of labor leaves something to be desired. Confusion has been provoked by haste and by decisions at the stages of planning and production preparation that were not well thought out. It is obvious that, unless these deficiencies are eliminated, it will be impossible to raise the effectiveness of construction operations as a whole.

Experience in working under the new terms has indicated that there are problems whose solution lie beyond the jurisdiction of the collectives themselves. These relate primarily to /**planning** [in boldface]./

Continuous planning for uncompleted production (work starts) below the norms established by USSR Gosstroy and a reduction in the planned backlog of work starts to the 10-15 percent level do not focus the collective on setting a precise work rhythm. Flaws in planning for the conditions for realizing the republic's Eksperiment program are becoming more perceptible.

The main guidance for planning and managing construction in the trust is the schedule for two-year continuous planning. However, planning organs and clients, despite the instructions and directives that are in effect in the republic, are not taking the plans seriously. Therefore, instead of solving tasks that are purely operational, the builders spend the first quarter on solving questions of formulating the annual program. From this comes untimely provisioning of the construction project with technical documentation and lists of titles construction projects, noncoordination of plans with production capacity, a lack of a standard plan for work starts in the list of construction projects, and delays in converting the site to development

The system of continuous planning also requires the client and the contractor to prepare carefully for the provisioning of construction, creating conditions for the concentration of resources at facilities that are due for early startup and enabling modern production technology and scientific organization of work to be introduced widely. In combination with the new form of economic accountability, the "neprerывka"

[continuous-planning method] should be the chief method for organizing production control. Not much has been done yet in this area. The new system of planning and economic stimulation does not in essence involve the client, and the republic's instructions about the "nepreryvka" and the rules for integrated engineering preparation for operations either are not mandatory or are not being coordinated with the practical activity of the organizations upon which the construction project depends.

In converting to the construction commodity output indicator under the experiment's terms, the client and the contractor should, based upon the "nepreryvka" schedule, the on-site list of titles of construction projects, and approved documentation, determine all the plan's technical and economic indices. Tardiness in formulating the plan indices, even later on--during execution of the program--cannot be allowed. For this purpose, it would seem that a conversion must be made to the timely preparation of the engineering and planning documents.

The question of changing the deadlines for providing builders with designs and budget estimates is long overdue. Even if the client transmits the engineering documentation for the next plan year by 1 September of the current year, as is required, then the orders to the republic's Glavsnab [Main Administration for Supplying Materials and Equipment] for materials will be released in April or May without substantiation. It is desirable to move the deadlines for transmitting designs and budget estimates to the builders to 1 March of the preceding year. All the excavations for the integrated engineering preparation for operations, after they are coordinated with the client and confirmed by the republic's Ministry of Construction, should become plan indices for the year.

The CPSU Central Committee decree, "The 50th Anniversary of the First Five-Year Plan for Developing the USSR's National Economy," emphasizes the necessity for raising planning work to a qualitatively new level and for comprehending more deeply the economic problems that the actual state of affairs engenders. It would seem that this is a direct instruction for radical improvement in the planning of construction operations and for exclusion of the practice of planning "from what has been achieved." The success of the experiment depends upon this also.

The reform poses in all severity /the problem of improving evaluating indicators [in boldface]./ The introduction of the construction commodity output indicator is a positive result. But the main confirming indicator--labor productivity, which is determined by output per person, based upon the budget-estimated cost of doing the work, in other words, in accordance with the "gross," remains unchanged.

The index of output per person has an important defect, since it depends entirely upon the materials intensiveness of the output, the budget-estimated prices, and the nature and ratios of the different types of work. Cheap work is not advantageous to the builders, so the principle, "the more expensive the better," is in vogue. But this contradicts the interests of the client and the interests of the state.

Moreover, the determination of labor productivity by a cost computation through the "gross" is not in keeping with the systematic improvement of design solutions, based upon more economical designs for buildings and structures. Progressive structure and measures for new equipment that reduce the cost of the construction project are not advantageous to the contractor—they make the project cheaper and reduce the output per worker. The Eksperiment should not evade this important category.

The experience of our Belorussian and Lithuanian colleagues and our republic's experience in management under the terms of the reform confirm the incompatibility of the construction commodity output and the "gross."

Until now, questions of raising labor productivity have not affected the designers. New design solutions for apartment houses under the structure that prevails for their application did not yield a real reduction in labor intensiveness in the first 3 years of the five-year plan. The directives for developing designs and budget estimates that the design institutes employ do not call for an indicator of labor intensiveness per unit of construction output. Yet it could determine actual productivity in the execution of specific operations at a specified facility—be it the construction of a building, the installation of engineering grids and networks, or the adding of improvements. Design organizations still permit disproportions between a reduction in the budget-estimated cost and the labor intensiveness of the operations. Thus there arises a contradiction between the designers' and the builders' interests, whereas they should resolve it together as a unified task.

The specifics of construction operations, particularly in housing construction, determine the nature of the commodity output. It should be completely finished and it should correspond to the design solution and to the construction norms. The construction commodity output that meets these terms has a price that is determined by the budget estimate. The budget estimate, as the reform stipulates, serves as a basic and unchanging document for the whole construction period. The planning of capital investment, the financing of construction, and settlements between the contractor and the client for execution of the work are performed on the basis of it.

However, today the budget estimate does not fulfill the role assigned to it. Changes, amendments and recomputation of estimates are constantly permitted. The practice of settlements between contractor and client "by case" has led to the impossibility of determining the price of the construction commodity output validly and reliably ahead of time. The budget-estimate prices themselves have become obsolete to a great extent, having lost their role as the economic indicator in construction. Determination of the cost of facilities in accordance with the price lists has not rectified the situation.

Experience confirms the need for consolidating and averaging out budget-estimate prices after providing for their invariability during the whole construction period, both for planning and for settlements. The cost and labor standards for each type of construction commodity output must be

approved for the whole plan period (five-year period, or year). For example, for an apartment house this can be the budget-estimated cost of 1 square meter of useful space, and also the labor intensiveness of its construction. Those standards that are computed per physical unit should be mandatory for design organizations, the client, the contractor, and the planning and financing organs at all steps of their activity.

Conversion to a firm averaged-out price per unit of final output will enable planning and the solution of many questions of construction-trust activity to be facilitated and improved. It precludes the freezing of capital investment in the form of an unused portion of the budget-estimated cost of a facility (if it can be made cheaper, its price is reduced). One must proceed on the basis of the fact that a firm price--a law of economic accountability--meets the interests of the state, the collective and each worker individually. The conversion to firm cost and labor standards ensues from the essence of the reform and the tasks of the Eksperiment.

In speaking about improvement of the initial stage--design--one cannot help but emphasize the importance of realistic designs. A gap between a scheme and its materialization still is observed often. Of course, progressive structure and building materials should be called for and three-dimensional layout and constructional solutions should meet modern trends in construction. However, one must not forget that the design solutions should be based upon the specific potential of the construction-industry production base. This is well known both in theory and in practice. Therefore, designs for the development of the future residential rayons of Ziyemel'blazm and Plyavniyeka with apartment houses small in section can be viewed only as an example of nonimprovement of design solutions.

The designs for developing these rayons failed to consider not just the production potential but also the issue of reasonable savings. The construction of single-section apartment houses costs more than multisectional housing by an average of up to 6 percent, and it is prohibited without economic and architectural substantiation. It uses city land irrationally. And experience proves that improvement in layout solutions and the architectural appearance of buildings can and should be combined with the requirements of economy.

Experience in managing under the new terms confirms: in order to improve results, it is necessary, particularly in housing construction, to create a unified technological flow line--from conception to final result. Planners, financing specialists, designers, clients, suppliers of structure, and the builders should make up this chain.

The final result--the capacity and facilities introduced into use--should be across the board, that is, it should determine the other indices for all participants in construction, regardless of their agency subordination. An effective production mechanism, whose activity embodies the interests of each worker and of society as a whole, can be created on this unified basis. True, it is impossible to join administratively all compartments

of construction into one management organization. But to find optimal indices and forms of incentives for the participants of a single technological flow line that depend upon the final results and the degree of participation of each is an urgent requirement for today. This should help to solve a series of economic, organizational and social problems. In the contrary case, the final results of construction will fall increasingly under the influence of intermediate elements and will experience the consequences of their uncoordinated actions and of a narrow bureaucratic approach. It would seem that our republic, which has strong scientific and design-engineering organizations, can become a pioneer in creating a single technological assembly line for housing construction.

Improvement in the planning of the whole management mechanism for controlling construction, the elimination of internal deficiencies in construction organizations, a rise in the role and responsibility of clients and precise interaction of the participants in the construction assembly line are the main reserves for raising construction operating effectiveness. Party and government decrees are aimed at, and the experience of leading collectives, particularly the patriotic initiative to provide for on-time or ahead-of-schedule introduction of the most important capacity and facilities into operation that was approved by the CPSU Central Committee, are oriented toward, bringing these reserves to bear. The republic's Eksperiment program is aimed at raising the effectiveness and quality of construction and at improving the final results. Therefore, it is necessary from the very start to approach its introduction creatively and to develop and expand its framework and improve its principles.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

UZBEK RURAL CONSTRUCTION PROGRAM REVIEWED

Tashkent STROITEL'STVO I ARKHITEKTURA UZBEKISTANA in Russian No 6, Jun 79
pp 1-2

/Article by Uzbek SSR Minister of Rural Construction N. R. Radzhabov:
"New Gains"/

/Text/ The July (1978) CPSU Central Committee Plenum noted the important role of capital construction in the countryside for the development of agriculture of the country and emphasized the need for the elaboration and implementation of specific long-range measures on the further improvement of the organization of production, housing, cultural and general construction.

At the 10th Plenum of the Central Committee of the Communist Party of Uzbekistan the rural construction workers of the republic were assigned great tasks on the intensification of the development of agriculture and the socialist reorganization of the countryside. A responsible role in implementing the program of transforming the countryside into a large industrial agricultural works with a high level of the housing and everyday living conditions of the rural workers is being assigned to the Uzbek SSR Ministry of Rural Construction.

The collective of many thousands of the ministry is working intensely on the fulfillment of the assignments of the 10th Five-Year Plan. In three years of the five-year plan the plan of contracting operations was fulfilled by 100.6 percent, 946,800 m² of housing, general educational schools for 111,000 students, children's preschool institutions for 20,100, hospitals with 2,835 beds, polyclinics for 3,510 visits, a number of movie theaters, clubs, personal service combines and other projects were put into operation. Barns for 25,700 head of cattle, 113,100 sheep, 36,000 hogs, 358,500 fowl, egg poultry factories for 804,100 laying hens, granaries for 33,200 tons, mineral fertilizer warehouses for 32,000 tons, hothouses with an area of 85.3 hectares, brick factories with a capacity of 86 million bricks a year, cotton plants for 56 saw gins and others were put into operation.

In conformity with the decisions of the 10th and 12th Plenums of the Central Committee of the Communist Party of Uzbekistan the Uzbek SSR Ministry of

Rural Construction is faced with the task of sharply accelerating the growth rate of the production program and ensuring the performance of construction and installation work in 1980 in the amount of 400 million rubles and in 1985 in the amount of 600 million rubles.

This year the construction organizations of the ministry have to perform 19.7 percent more contracting work than the achieved level of 1978. The placement into operation of egg poultry factories for 374,700 laying hens, meat poultry factories for 1 million broilers, barns for 11,684 head of cattle, 63,400 hogs and 26,500 sheep, hothouses with an area of 24.2 hectares and many other production projects is planned. Along with this it is necessary to perform a large amount of work on the construction and placement into operation of apartment houses, general educational schools, children's preschool institutions and other projects for cultural and everyday purposes.

During the first quarter of this year the collective of the ministry had already achieved a high rate of construction and installation work with an increase as compared with the first quarter of 1978 of 11.6 percent. The assignments on placing housing, generational educational schools, kindergartens, hospitals and polyclinics into operation were overfulfilled. A large number of agricultural projects in excess of the plan were put into operation.

Guided by the decisions of the 10th and 12th Plenums of the Central Committee of the Communist Party of Uzbekistan and bearing in mind that in 1979 and subsequent years the increase of construction and installation work has to be provided mainly by means of the increase of labor productivity and the introduction in production of the achievements of science and technology and advanced know-how, the ministry has outlined and is implementing a major program of organizational and technical measures. They are aimed at the further industrialization of construction, the assimilation of new effective constructions and materials, the increase of the quality of construction and installation work and the products being produced, as well as the improvement of the structure of management in the central staff and the system of the ministry.

The utmost development of complete prefabrication is the main direction of the technical policy of the Uzbek SSR Ministry of Rural Construction. In 1978 the level of construction with prefabricated parts for the ministry was only 37 percent as against 49 percent for the USSR Ministry of Rural Construction. Steps are being taken to expand large-panel housing construction. For this purpose it is envisaged to increase the production of items of large-panel apartment houses of series 46 at Construction Trust No 20 (Bukhara) to 15,000-20,000 m² a year and to organize their production at construction trusts Nos 12 and 21 (Nukus and Urgench), as well as the shop of the branch of the Bektemir Plant of Reinforced Concrete Items in the settlement of Novo-Mikhaylovka. It is planned to increase the total placement into operation of totally prefabricated housing this year to 130,000-140,000 m² or 40-43 percent of the total housing placed into operation.

Studies on the improvement of the designs of standard series 46 are being made by the Uzorgtekhsel'stroy Trust. At the same time it is planned to implement measures on the increase of the level of plant readiness of the parts of completely prefabricated apartment houses, which are produced by the Dzharkurgan Combine of Construction Structures and other enterprises of the ministry.

A great reserve for increasing the level of construction with prefabricated parts exists in social, cultural and general construction. In 1978 the proportion for cultural and general purposes of completely prefabricated design was only 4 percent. This year it is planned to increase to 14,000 m³ the production of items of series IIS-04 at the Fayziabad Combine of Construction Structures, as well as to organize their production at the Bektemir Plant of Reinforced Concrete Items.

The work on the increase of the degree of prefabrication of production construction, the further standardization and the extensive use of effective and light-weight structures will be continued. The construction of agricultural buildings using precast reinforced concrete frames will undergo priority development. This year the preliminary work is being done on placing into production a new standard series of frame constructions 1,822 for buildings with spans of 12, 18 and 21 m.

The use of various types of piles, including advanced piles (pile-columns, tapered piles), will be expanded in production construction. It is planned to put into production precast reinforced concrete triangular strutless girders of series 1,863 for various spans (6, 9, 12 and 18 m) for the roofs of a number of agricultural buildings, including auxiliary and warehouse facilities.

The amount of use of light-weight asbestos cement constructions in 1979 will increase to 250,000-270,000 m² and in the next two or three years will reach 450,000-500,000 m².

Starting in 1979 and in subsequent years light-weight structural metal constructions like the Kislovodsk, the Plauen and others will be used at the projects of the Uzbek SSR State Committee for the Supply of Production Equipment for Agriculture and its own production base.

This year the ministry jointly with the Scientific Research Institute of Building Structures of USSR Gosstroy (Kiev) put reinforced cement panels of arches into production at the Bektemir Plant of Reinforced Concrete Items. The construction of two experimental arched staple cotton storehouses made from these panels is being carried out at the Kara-Su Cotton Plant. Taking into account the economic efficiency from their introduction, including the reduction of the consumption of metal and the decrease of the labor inputs and the construction period, the extensive use of reinforced cement panels of arches at the projects of the Uzbek SSR Ministry of the Cotton Cleaning Industry and the Uzbek SSR State Committee for the Supply of Production Equipment for Agriculture is planned for the next few years.

Along with the use of advanced constructions the ministries is taking steps to increase the amounts of the introduction of new and efficient materials. The use of shaped glass for window fillings of partitions is increasing annually. This year it is planned to use 25,000 m² of dry plaster of higher quality than usual for the building of industrial partitions. In subsequent years its use will increase sharply. The laying of heating systems by the trenchless method will be further developed; this year a mastic poured bitumen-keramzit insulating compound will be used for the insulation of pipes, but beginning in 1980 it is planned to put into operation a production line for applying bitumen-perlite insulation to pipes with a productivity of 70 m³ of pipe a year. The production and introduction of the effective insulator FRP (phenol-resol foam plastic) both of the sheet form and in the form of shells for the insulation of overhead pipelines will be continued. In accordance with the studies of the experimental division of the Uzorgtekhsele'stroy Trust this year it is planned to perform the necessary work on the preparation for the production of the new effective insulator Terpesil made from water glass.

Along with measures on further scientific and technical progress the ministry is performing work on the increase of the organizational level of construction. A system of comprehensive plans of the engineering preparation for production is being introduced, all the construction projects are working according to weekly and daily schedules. Conference calls are made weekly, the operations coordinating center (OKTs) meets twice a month at the ministry to solve production problems which arise.

Great importance is ascribed to the enhancement of the role of the organization of material and technical supply and the replenishment of the construction projects with constructions, items and materials. The development of a network of bases and the improvement of the work of the UPTK are one of the main tasks of the trusts of the ministry. Much attention is being devoted to the perfection of the structure and improvement of the work of the industrial enterprises of the ministry, first of all the Uzsel'stroyindustriya Trust.

The fulfillment of the tasks on increasing the technical level of construction is inconceivable without a reliable production base. Therefore, the main task of the ministry is the assurance of the priority development of its own production base. By means of reequipping, renovation, expansion and new construction of projects in 1983 the capacities for the production of precast reinforced concrete will be increased to 700,000 m³, for the production of large-panel apartment houses to 550,000 m² of total floor space of housing, metal constructions to 15,000 tons, carpentry items to 400,000 m² and nonmetallic construction materials to 3 million m³ a year.

In 1980-1982 testing grounds for the production of completely assembled reinforced concrete items with a capacity of up to 10,000-15,000 m³ a year, which are equipped with stationary cement mixers with a productivity of 50,000-60,000 m³ a year, will be set up at all the general construction

trusts. Steps are being taken to manufacture in 1979 nonstandardized equipment and accessories for the production of items of series IIS-04.

The implementation of the major program on the development of the construction industry of the ministry will be a decisive condition for the successful accomplishment of the tasks set by the party and the government for the rural construction workers of Uzbekistan.

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CONSTRUCTION, CONSTRUCTION MACHINERY AND BUILDING MATERIALS

CONSTRUCTION MATERIALS INDUSTRY: FOUNDATION OF CAPITAL CONSTRUCTION

Tashkent STROITEL'STVO I ARKHITEKTURA UZBEKISTANA in Russian No 7, Jul 79
pp 1-2

[Article by Sh.Kh. Inoyatov, deputy ministry of Uzbek SSR construction materials industry]

[Text] The economic strategy developed by the 25th CPSU Congress provides for a stable and balanced development of Soviet industry in which a major role belongs to capital industry.

During the Ninth and Tenth Five-Year Plans, the volume of capital construction grew sharply in Uzbek SSR. In the Ninth Five-Year Plan almost as much capital was used as in the two preceding five-year plans taken together.

The execution of such a volume of capital construction was due to the fact that the Central Committee of the Communist Party of Uzbekistan and the Uzbek SSR Council of Ministers began early to plan and execute large operations on the development of the capital-construction production base. Unflagging attention is being devoted to this question in the current five-year plan.

In the last three years of the five-year plan, the construction materials industry has increased production output by 19.4 percent over 1973; 7.9 million rubles of production was put out above plan. Annual plans have been overfulfilled for the production of 32 kinds of products--linoleum, plaster of Paris, mineral wool, glass, facing from granite and marble and others. In planning the development of industry, special attention has been paid to the organization of production of effective materials and products that reduce labor outlays in construction. In the production of asbestos-cement products, the output of small size VO slate has been discontinued and the output of medium-wavy SV-40 slate has been initiated; the production of a whole group of acoustic decorative materials has been started.

The development of the industry is not only due to the construction of new enterprises but primarily because of the modernization and technical reequipping of existing ones and the introduction of new equipment and the latest technological processes. In recent years two manufacturing lines for the

production of cement went into operation at the Navoi Cement Plant; here a modern, most progressive method of dry production, is being used, reducing fuel expenditure by 30 percent. The operation of this plant's capacities will make it possible to sharply improve the availability of cement to construction projects and enterprises of the construction industry. At the same time work has been carried out to ensure the full use of capacities at existing cement plants.

In the wall materials sector, work is continuing on the technical reequipment of existing plants and getting full use of capacities at the newly operational Karshi and Il'ich brick plants. At the present time, the relative share in the sector of tunnel-type furnaces for brick firing has reached 55 percent. During 1976-1978, 17 automatic placers of raw bricks on drying carts were installed.

Considerable work has been done on increasing the mining of blocks of natural decorative stone and producing from them facing products; their output in 1978 reached 260,000 m² as opposed to 175,000 m² in 1975. Highly efficient equipment has been put to use in the sector for the extraction and processing of products.

One of the chief tasks of the industry aside from increasing the production of materials is to improve their quality. For this purpose, work is going on on the introduction of a comprehensive system of product quality control and its certification as belonging to the highest category of quality. In the past three years, the highest category and the Seal of Quality have been awarded to 20 kinds of products. The production volume of these products in the first quarter of 1979 amounted to 10.8 percent of total production volume. It should be pointed out that despite the work done the quality of individual types of products--brick, lime, plaster of Paris, soft roofing materials and several other types does not always meet requirements and one of the tasks is to achieve a sharp improvement in the quality of all kinds of materials produced by the industry.

Improvement in the quality and increase of the production of wall materials will greatly help fulfillment of the decisions of the Central Committee of the Communist Party of Uzbekistan and the republic Council of Ministers. In the current five-year plan, the intention is to build and put into operation a group of enterprises for the production of progressive items and materials--a shop for the production of perlite powder and roasting light weight in Keles Village, a shop for large-size baths at Santeckhlit Plant, a shop for flat slate at Kuvasay Cement Combine. Work will be started on the expansion of production by 600,000 m² of large-size facade tile at the Tashkent Construction Materials Combine and by 1,800,000 m² of large-size and colored floor tile at the Angren Ceramic Combine.

Large, complex tasks face the construction materials industry in the current year. The total production volume of construction materials will increase by more than 31 million rubles, or 11 percent. Almost the entire increase of the industry's production will have to come through growth of labor productivity without increases in the number of the industry's production personnel. The

production of Mark 500 Portland cement will increase 130,000 tons over the last year. Output of high-quality asbestos-cement products will be increased. The production of SV-40 slate has to be increased by 10 million standard slabs. In addition, capacities will be put in operation this year for the production of large-size flat slate in the amount of 30 million standard slabs.

The main tasks in the cement sector of the industry are: putting capacities in operation at the Navoi Cement Plant, increasing the productivity of main manufacturing equipment through its improved operation, equipping rotating furnaces with efficient heat exchangers, reducing moisture in slag for the purpose of increasing hourly productivity of furnaces and reducing expenditure of fuel.

The sector of nonmetallic materials will be further developed. In 1979 the output of facing products from natural stone will increase by 8.5 percent.

One of the main tasks of the ceramic industry in 1979-1980 is to complete technical reequipment and to put into operation the new manufacturing line at the Angren Ceramic Combine. At the same time, the color scale will be significantly expanded, quality of products will be improved and the production of tiles with designs and ornaments will be increased.

Responsible tasks also face the industry of wall materials. During 1979-1980 the output of wall materials is to be increased by 10.5 percent, including construction brick--by 9.9 percent.

Special attention will be given to ensuring stability in the output of facing brick and increasing its production, organizing the production of first grade plaster of Paris and improving the quality of lime.

Collectives of the enterprises of the sector, implementing the decisions of the November (1978) Plenum of the CPSU Central Committee and the December (1978) plenum of the Central Committee of the Communist Party of Uzbekistan, are full of decision to successfully deal with the tasks of the fourth year of the 10th Five-Year Plan, to work efficiently and to ensure fullest satisfaction of the needs of the republic's national economy for construction materials and products.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

ECONOMICALLY SOUND PLANS URGED FOR RURAL CONSTRUCTION

Moscow SEL'SKOYE STROITEL'STVO in Russian No 6, Jun 79 pp 1-2

[Article by V. Nefedov, chief engineer of the Main Administration for Capital Construction of the RSFSR Ministry of Agriculture: "Economically Sound Plans for the Village"]

[Text] The volume of capital construction in agriculture in the Russian Federation has at the present time reached almost 10 billion rubles. The commissioning of facilities for cattle, hogs, sheep and poultry, as well as housing, is increasing with each year. Under these conditions, questions of improving the organization and reducing the cost of project planning and construction are taking on particular significance.

In the Russian Federation, more than 300 planning institutes under the jurisdiction of 50 ministries and departments, many of which do not specialize in the drafting of plans for agricultural objects, are engaged in project planning for the construction of rural projects. More than a quarter of the institutes are located under the authority of a contracting construction organization, 6 are subordinate to the USSR Ministry of Agriculture, while a large portion belong to the system of the USSR Gosstroy [State Committee for Construction].

Besides this, 75 local agricultural organs have their own planning estimates bureaus functioning in conjunction with them, bureaus which perform jobs in the main tied to small objects, modernization and capital repairs of animal husbandry farms. Their number is continuing to increase.

Owing to the multitude of planning organizations, great complications arise in the effective conduct of a unified technical policy in agricultural project planning and construction.

According to the existing statute, planning estimates can be approved only after agreement with the contracting organization. Now there are organizations from more than 50 ministries and departments, which have independent industrial bases that are calculated for the output of construction designs

for the performance of jobs in a basic specialization, carrying out construction on the sovkhozes and kolkhozes of the RSFSR. Even the designs being produced by enterprises of the same ministry in various oblasts, krais and autonomous republics possess substantial differences. All this leads to a complete reworking of the standard plan as it is tied to local conditions and to an increase in the cost of construction.

Thus, for instance, upon agreement on the documentation for a complex for the production of milk with 1,200 cows at the Rezhevskoy Sovkhoz in Sverdlovskaya Oblast, the contracting construction organization demanded from the customer to use heavy structures of the industrial type (columns, slabs, etc.), as a result of which the estimated cost of construction increased by 300,000 rubles.

In connection with the substitution of the contracting organization of the USSR Ministry of Construction for the contracting organization of the USSR Ministry of Power and Electrification during the construction of the Ivanovskiy Poultry Factory, the customer had to revise the technical specifications. By virtue of a change in designs and the transport circuit, the increase in cost amounted to 4.4 million rubles.

All this bespeaks the need to approve zonal catalogs of building designs and products, which all planning and contracting organizations that carry on construction in the village will be obliged to use without their agreement.

At the present time the drafting, agreement on and approval of the technical and economic bases, the engineering plan and the blueprints are, as a rule, stretched out for three to four years and, if you take into consideration the actual periods of time required for construction, then six or seven years, and sometimes even more time, passes from the beginning of project planning to the commissioning of the project. Agreement alone on the types of fuel takes the RSFSR Gosplan [State planning Committee] 6 to 12 months, while the title lists of planning and surveying work take up to one year. It is no accident that the need arises during the process of construction to make substantial changes in the technical specifications in terms of processing methods and replacement of equipment, which also leads to an increase in cost. The specifications become old and standard plans are rescinded. As a result, a considerable number of obsolete projects on which outlays of funds in the amount of several hundred thousand rubles have been made have piled up in a number of oblasts.

In this connection it would be advisable to grant the right to republic ministries of agriculture to set up a procedure for the approval of title lists for planning and surveying work and for construction, as well as of technical specifications for objects of construction with an estimated cost of up to 10 million rubles. It is also required to reduce the periods of time needed for agreement and project planning and to reduce the volume of technical specifications.

According to the existing procedure, the payment to an institute for work performed is made prior to the appraisal of the plan. Deadlines have not been

set up for its revision in terms of the critical remarks in the appraisal. Substantial overstating of the volumes of work is permitted in the estimates, leading, as a rule, to a growth in the cost of construction. For instance, during last year an appraisal was made to verify estimated specifications of the Saratov Interkolkhoz Planning Institute in the amount of 54 million rubles and it was revealed that the cost had been overstated by 1.3 million rubles, while volumes that were omitted in the amount of 95,000 rubles were added simultaneously. But the revision of the plans and the correction of the estimates in terms of the critical remarks in the appraisal have dragged out many months and very often the problems alluded to in these critical remarks are not eliminated at all. The system of sanctions for violation of the deadlines of project planning is so complex and ineffective that it has almost no influence on the financial activity of the institute.

An urgent need has arisen to establish a procedure whereby the final payment for planning and surveying work would be made only after elimination of the critical remarks in the appraisal and after approval of the plan. There is also a need to entrust planning organizations with the collection of all materials and specifications necessary for project planning.

The system of payment for planning work is also imperfect. In planning work, as also in construction, they have not succeeded in freeing themselves from emphasis on volume as the basic planning indicator. All the material wealth of the planning institute (the group in terms of wages, the wage fund, the incentives fund, etc.) becomes greater as the volume of work performed expressed in monetary terms becomes greater. This gives birth to a growth in the estimated cost of the projects and the cost of project planning. This system for the payment for planning work, in addition, fails to provide an incentive for the drafting of planning and estimates documentation for the modernization of existing facilities.

For instance, in Vologodskaya Oblast the tying together of complexes for 800 cows was worth nearly 8,000 rubles in 1976, nearly 11,000 rubles in 1977, while in 1978 it was already worth more than 15,000 rubles, or had doubled over a period of two years. This also bespeaks the imperfection of the allowances that enable planning organizations to maneuver them about freely.

The increase in the cost of planning work is also linked to the fact that at the present time the volumes of planning and estimates documentation are unjustifiably great. In a number of places, the tying together of a standard plan for the construction of a one- or two-apartment residential house has begun to cost up to 2,000 to 3,000 rubles. It is enough to say that there are nearly three employees of planning organizations working in the republic as a whole for each kolkhoz or sovkhoz.

In recent years the requirements for environmental protection have been substantially raised. But the absence of unified standardized documents for the Ministry of Health and Ministry of Land Reclamation and Water Resources on this question is leading to a situation where unjustifiably expensive and complex systems are being built locally for the purification of discharge

drainage upon the request of supervisory organs and the expansion of existing livestock breeding farms is being hampered.

The situation has reached the point where they have begun to plan in terms of several fire tanks, which, as a rule, are not operated, at small animal husbandry complexes and farms. There are two to three systems for multistage sewage treatment being envisaged. In accordance with the sanitary engineering clauses, two to three garages are being planned: one for intrafarm transport, another for off-the-farm transport and a third for carts. Reinforced concrete barriers, workshops, fire stations for one to two motor vehicles and a number of other facilities are stipulated which not infrequently already exist on the farms. Sometimes you look at a complex or a farm covered from end to end with objects for subsidiary and ancillary purposes and you can't even find the front of the complex among them. How great must be the expenditures required in connection with this for public services and amenities, engineering mains and networks and the land areas being built up!

In this case, an important factor in reducing the cost of construction is close contact between project planners and clients. There has been good experience in terms of their collaboration in Tyumenskaya Oblast, where a saving of funds worth a sum of more than 400,000 rubles was achieved during the project planning for and construction of a dairy complex for 800 cows at the Vernyy Put' Sovkhoz in Yalutorovskiy Rayon. In connection with this, engineering mains and networks, ostensible public services and amenities and territory in use were substantially reduced.

But in solving these problems, the existing sanitary engineering and other norms are creating considerable obstacles, particularly during the expansion and modernization of existing farms. Owing to this, it is not infrequent that new farms must be erected alongside existing ones. Hence, a critical need has arisen to revise the accepted standards now existing, making them more flexible so that they might take into consideration the dimensions of production, various local traditions, climatic conditions, etc. This would enable one to reduce the estimated cost of construction substantially.

Many planning institutes that have a vested interest in work based on volume, instead of in reducing the volume of project planning and of lumping together one or two projects on the farm of which the farm is in need at the stage in question with the drafting of the master plan, will, against the desire of the clients and in the absence of need, lump together at one time all objects serving subsidiary and ancillary purposes and other objects, while giving consideration to the capacity of the farm as calculated in terms of the remote future. In practical terms, these objects are also not built, since the farms do not have enough financial assets and material and technical resources for this.

During the past two and one-half years, technical specifications in the amount of 35 million rubles have been produced in Omskaya Oblast for a number of farms. But of them, only 30 percent will be utilized during the entire five-year plan,

while the remaining specifications were thus made to be laid "on the shelf." The Omskkolkhozproyekt [Omsk Kolkhoz Planning] Institute was paid nearly 300,000 rubles for this work, although two-thirds of its 100 specialists engaged in project planning for farms have worked in vain for the entire year. Hence, comprehensive project planning on existing livestock breeding farms must be carried out only in those places where the opportunities exist for total utilization of all specifications during the next two to three years.

Practice has shown that up to 15 planning organizations from various ministries and departments, of which many are not specialized, are engaged in project planning for agricultural objects in each oblast. Hence, one can no longer put off the question of the organization in each republic, kray and oblast of a single planning institute for comprehensive project planning in the village on the basis of planning organizations under the jurisdiction of the RSFSR Gosstroy [State Committee for Construction].

During recent years, the industrialization and degree of prefabrication of agricultural construction have grown sharply. But project planners and builders are incorporating it not by virtue of a search for rational solutions, but by means of a growth in the cost of construction.

For instance, the Kirovskiy SSK [Prefabricated Construction Combine?] is at the present time turning out designs for cowbarns for 400 cows with an expenditure of 3 cubic meters of reinforced concrete per cow and a cost of 2,725 rubles for one stall. In order to increase the degree of prefabrication in construction, the Kirovskiy Interkolkhoz Construction Association and the planning institute have proposed altering the design of all subsidiary and ancillary buildings as they make the transition to the completely prefabricated variant. But the expenditure of precast reinforced concrete for one cow in connection with this will reach nearly 8 cubic meters, while the cost of a cattle stall will grow by 500 rubles. One cannot say that such a solution is now justified. Or take a second example. The Russian Kolkhoz Construction Association approved a zonal catalog of industrial products and designs for agricultural buildings for 1977-1981, which was drafted by the Irkutskkolkhozproyekt [Irkutsk Kolkhoz Planning] and Mosnechernozemindustriyeprojekt [Moscow Non-Chernozem (Black Earth) Zone Industrial Planning] institutes for use in regions of the Urals, Siberia and the Far East. This catalog, which is not at all strange, stipulates that one use only certain reinforced concrete designs in primordial forest regions. According to the second section of this catalog, "Products List of Light-Weight Designs of Timber, Asbestos Cement, Metal and Other Efficient Materials," it is not envisaged that one utilize these designs and materials in a single association, except the Yakutiya Association.

This is the result of the fact that both contracting and planning organizations have a vested interest in the use of expensive, "profitable" designs and materials. With a view to increasing their motivation to reduce the cost of construction, one must revise the procedure for the generation of income for contracting and planning organizations, keeping in mind that one must implement the extra charge for overhead expenses and planned saving not out of the total

volume of direct costs, but only from expenditures on wages and from the operation of equipment during construction.

To be steadfast in reducing the cost of construction is a task to which we are bound by a decision of the July (1978) Plenum of the CPSU Central Committee.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

ECONOMIC ASPECTS OF RECONSTRUCTION IN THE VILLAGE

Moscow ZHILISHCHNOYE STROITEL'STVO in Russian No 6, Jun 79 pp 20-23

[Article by Candidate of Economic Sciences V. M. Stern: "The Economy of Rebuilding the Village"]

[Text] One of the important tasks in transforming villages is rebuilding. Rebuilding is a combination of measures conforming to a plan for the improvement of the lay-out and building up of the area and for public services and amenities in settlements with a view to organizing their physical environment in a manner that as much as possible responds to the way of life and requirements of the rural population.

An analysis of planning practice shows that instances of repeated reworking of drafts for the lay-out and building up of settlements that are being rebuilt are still not infrequent. Such a corrective has been necessitated by an incorrect determination of the periods of time until retirement of existing housing assets, an understating of losses from their demolition and a lack of working through of the measures in the first line of construction. Often an area built up with low-rise residential housing is designated for demolition as it depreciates without scheduling capital repairs to be made, which is economically unjustified. This leads to additional capital investments in new construction. As a result, the plan for the settlement, which is being shaped on the spot, remains only on paper, in place of the existing village.

Rural settlements are formed as elements of local group systems for the settlement of people in new locations, while taking into consideration the principles of unity and concepts of coordination and of being mutually complementary. Hence, during the rebuilding of each settlement, reorganizing measures for all interconnected population points must be taken into consideration.

A structural organization of the settlement which is marked by a degree of functional and spatial regulation of its elements and by development in time is being considered as an optimizing system. And although the organization of the settlement must meet the necessary standards (analogous to construction on vacant territory) as a result of rebuilding, none the less, the forms and extent

of structural organization depend here to a certain extent on the initial condition of the housing assets as they have taken shape. A temporary retention of this or that deviation from the standardized requirements is permissible during the process then of transition to the planning proposal.

The planning drafts for rebuilding define a certain degree of conclusiveness in the system, but not its completeness. Project planning consists of the following: an analysis of the problem of rebuilding in a specific situation (the formulation of goals and tasks and the selection of the criterion); the establishment of limitations; the justification of the direction in reconstruction; the drafting of options for measures relating to rebuilding; an evaluation of the results; refinement and selection of the final option.

The formation of nonproductive capital determines the social impact, which is expressed in the satisfaction of the appropriate material and spiritual requirements of the rural population and, in addition, in a reduction in the efforts being expended by the population for the performance of daily movements connected with work, time off, studies, medical and cultural and personal services, supply, etc.

In evaluating the measures being taken in the area of rebuilding for the accounting term, the expenditures of physical, manpower, financial and natural resources are minimized under the condition that the targeted social result (norms for extent that one is provided with residential housing, the comfort of the housing, the level of cultural and personal services, expenditures of time on maintenance, etc.) is achieved. In evaluating measures in the area of rebuilding of the first line of construction, limitations in terms of resources are subject to accounting—the social impact is maximized with the capital investments being planned in real terms.

Depending on the stage of work and the extent of specification of the planning proposals, the following technical and economic indicators are utilized for economic evaluation: natural indicators, expressed in physical gages or in relative form (in percentages, in the form of ratios) and value indicators, reflecting the sum total of costs (and losses) connected with rebuilding. The use of value indicators is also required in those instances where the comparison of values of the natural technical and economic indicators does not permit one to establish the degree of saving entailed by the decision. For example, a rise in the density of the available residential housing on the territory subject to rebuilding can entail the demolition of the existing housing resources; the assimilation of new territories for building up can entail additional costs on the engineering preparations of the territories and on the withdrawal of agricultural lands from use, etc. The products list and procedure for calculation of the indicators is defined by the "Unified System of Technical and Economic Indicators for the Draft of the Lay-out and Building Up of Rural Population Points" (Moscow, Stroyizdat, 1978).

An evaluation of the conditions for rebuilding the village was conducted based on the example of typical sovkhoses and kolkhozes in the Non-Chernozem [Non-Black Earth] Zone of the RSFSR (representative objects), which enabled one to outline rational directions in reconstruction work.

In order to determine losses from the demolition of available housing during the process of rebuilding, it is necessary to take into consideration the terms for withdrawal and the make-up of those factors in demolition which make for either an increase in cost or for depreciation. Premature demolition of houses does not provide for the deferment of capital investments for the reproduction of available housing resources being withdrawn for the period of the remaining service life of the objects. Losses from the demolition of public stocks of housing and public utilities at an age at which they are capable of being repaired make up 40 to 61 percent of the replacement value (depending on the degree of wear and the soundness of construction). Individual houses are built anew in the case of natural wear by virtue of assets belonging to the population. Hence, losses from their premature replacement by the municipal fund are practically equal to the replacement value of houses regardless of their extent of wear and the soundness of construction.

The dynamics of withdrawal of existing housing resources must be defined both in a settlement undergoing rebuilding, as well as in small-scale points for new settlement of people being relocated from other villages by giving consideration to the development of the highway network and the system of intersettlement services. The existing housing resources are classified as temporary, conditionally supporting and supporting in conformity with the remaining service lives of the buildings. The temporary resources are characterized by heightened wear, in connection with which the designation of capital repair is not advisable. The temporary housing resources will be withdrawn at the first stage without being connected with measures relating to rebuilding. The conditionally supporting housing stock is marked by being in a condition capable of repair and will be withdrawn during the course of the accounting term only in the case that its use has been restricted by a prohibition on the performance of capital repair. The supporting stock will also continue to function beyond the limits of the accounting term.

The factors determining the content of rebuilding can be subdivided into external and internal. Among the external factors are the following: the scope and rate of development of the settlement, the organization of highway connections and of the system of intersettlement services, the potential for territorial development (economic factors), climate, landscape, etc. Among the internal factors are the following: the functional zoning which has taken shape, the architectural and lay-out structure of the village, the nature and arrangement of the available housing stock, elements of public services and amenities, lay-out restrictions and the presence and special features of territorial reserves.

Settlements of intensive development, which are being gradually formed and which have already taken shape, are earmarked according to the scope and rate of construction.

Settlements of intensive development are characterized by a considerable expansion and concentration of production and by an increase in population and the construction resources over the course of a relatively brief period of time (10 to 15 years). In connection with this, the financing and material and technical provisioning of construction bear a goal-directed and comprehensive

character on the basis of utilization of centralized assets and capital. Included among such objects are, primarily, settlements at major animal husbandry complexes of the industrial type, which are being created, poultry factories, and processing, repair and agroindustrial enterprises, as well also as a number of settlements over-all experimental and model construction. It is necessary to develop vacant lands that adjoin the settlement on a substantial scale during the intensive development of construction, along with the utilization of small-scale dispersed territorial reserves.

A considerable increase in the population and construction fund during the course of a more prolonged period (25 to 30 years) is characteristic of settlements that are being formed gradually. To these belong the majority of settlements in which a gradual concentration of production is planned and into which residents from small villages are being resettled.

Settlements which have already taken shape are population points where there is no substantial growth in the population or where it is being reduced. In this case, the rebuilding that is being carried out is not connected with a quantitative increase in nonproductive fixed capital and can be defined by the tasks of improving the lay-out organization of the population point, by arranging the areas built up in an orderly manner, by raising the level of all-around and engineering civic improvements, by freeing reserves of agricultural lands, by sanitary engineering and hygiene requirements, etc.

If a population point is developing gradually or has already taken shape, then it is necessary to utilize each vacant plot within the limits of the village in a rational manner.

When there is a shortage of territorial reserves within the limits of a village that has already taken shape, adjoining lands that are not being utilized in agriculture (pastures, meadows, lands long fallow, non-fruit-bearing orchards, etc.) are developed in conformity with the act on the selection of territory.

The general direction in the rebuilding of a settlement is determined subject to the initial situation. It can be partial, substantial and, in rare cases, radical.

Partial rebuilding envisages improvement and development of the lay-out which has already taken shape and renovation and civic improvements of and in the existing areas that have already been built up.

Substantial reconstruction is characteristic, as a rule, of gradually and intensively developing population points, whose lay-out and built-up areas require considerable changes. It is linked with the accommodation of a large volume of construction, mass replacement of construction resources and a demand for new territories. This direction assumes the creation of a lay-out structure for the settlement that is new in principle and in which the existing lay-out and built-up areas will play a secondary role and will be altered.

These two trends are the most typical of the rebuilding of rural population points of the Non-Chernozem [Non-Black Earth] Zone of the RSFSR.

Finally, radical rebuilding can be carried out in exceptional cases: when there is a need for a radical change in the nature of the use of territory in the population point, under conditions marked by dispersal of antiquated built-up areas and with the need to eliminate unfavorable physical and geological phenomena (formation of ravines, landslides, subsidence of the soil, floods and submerging of the territory, remaking of the embankment strip of rivers and reservoirs, etc.). Radical rebuilding is, as a rule, accompanied by intensive development of new territories and, subsequently, the entire demolition of areas currently built up.

Local tasks and the techniques for their accomplishment are defined in selecting the over-all direction in rebuilding: the improvement of the functional and construction zoning, rebuilding of a residential area that has already been built up, the formation of a public center, the arranging of transport and pedestrian links, engineering equipment, exterior public services and amenities and the planting of greenery in the territory (see the drawing).

Improvement of the functional zoning predetermines the nature of the subsequent use of the territory and of the choice of directions for the territorial development of zones, for building a system of communications and the volume of measures taken in the area of rebuilding. Functional zoning includes an evaluation of the initial situation and the tasks arising therefrom: preservation and arranging of zoning in an orderly manner or of relocation of production complexes and, in a number of instances, of objects in the residential greenbelt.

An analysis of the initial situation shows that a change in the functional zoning that has already taken shape, if dictated by sanitary engineering and hygiene, technological and other requirements, must take into account the stages in the transition to the new character envisioned for the use of the territory. It is economically advisable to reduce to a minimum the volume of demolition of existing housing resources at each stage of rebuilding. With these aims in mind, one can envisage the re-equipment of available buildings and structures for new purposes, a change in the specialization of objects, the establishment of this or that lay-out restriction and the formation of sanitary-engineering protective zones. In evaluating the effectiveness of options in the components of the costs incurred, it is necessary to take into consideration also a change in the accounting production cost of agricultural output if this was brought about by measures related to the improvement of functional zoning (consolidation of complexes, the creation of a centralized production zone, etc.).

Construction zoning in the residential greenbelt territory during rebuilding can envisage both the formation of building zones, each of which is built up with houses of a certain model with an equivalent level of public services and amenities, as well as the formation of mixed building zones, each of which is built up with houses of different models and number of stories and which stipulates differentiation of the territories within the limits of the zones in

Diagram of sequence in rebuilding rural population points and the technical and economic evaluation of options:

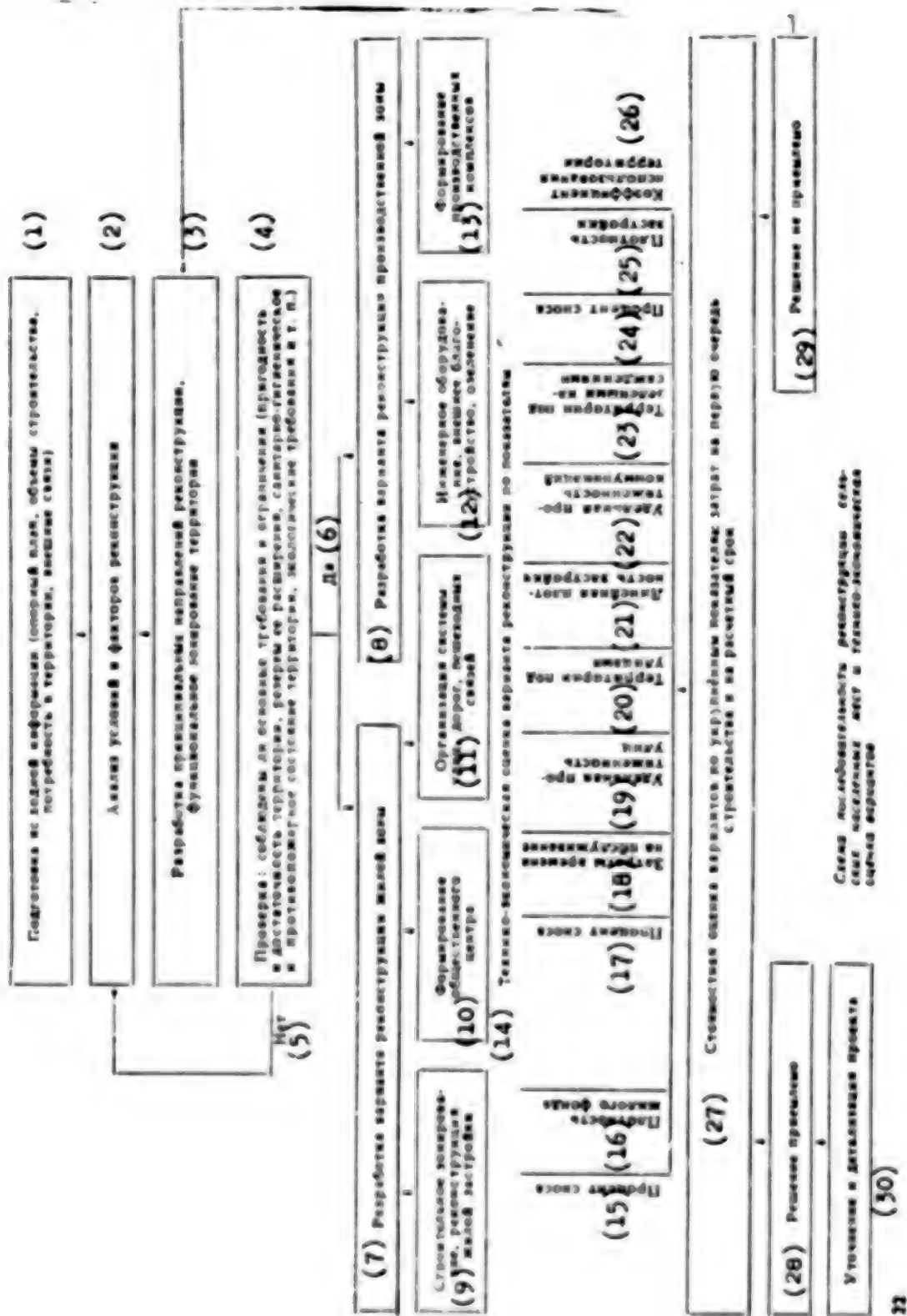


Diagram of sequence in rebuilding rural population points and the technical and economic evaluation of options:

- Key:
1. Preparation of initial data (the supporting plan, volumes of construction, requirement for territory, external communications)
 2. Analysis of conditions for and factors of rebuilding
 3. Drafting of directions in rebuilding in terms of principle, functional zoning of the territory
 4. Verification: whether basic requirements and restrictions (suitability and adequacy of territory, reserves for its expansion, sanitary engineering and hygiene and fire-prevention status of the territory, ecological requirements, etc.) have been observed
 5. No
 6. Yes
 7. Drafting of option for rebuilding of residential zone
 8. Drafting of option for rebuilding of production zone
 9. Building zoning, rebuilding of residential areas that have been built up
 10. Creation of public center
 11. Organization of the system of streets, highways and pedestrian communications
 12. Engineering equipment, exterior public services and amenities, planting of greenery
 13. Creation of production complexes
 14. Technical and economic evaluation of option for rebuilding in terms of indicators for:
 15. Percentage of demolition
 16. Density of available residential housing
 17. Percentage of demolition
 18. Expenditures of time on services
 19. Proportionate length of streets
 20. Territory used for streets
 21. Linear density of area built up
 22. Proportionate length of distribution supply lines
 23. Territories planted with greenery
 24. Percentage of demolition
 25. Density of area built up
 26. Ratio of use of capacity of territory
 27. Cost evaluation of options in terms of consolidated indicators of costs for the first line of construction and for the accounting term
 28. Solution acceptable
 29. Solution not acceptable
 30. Refinement and detailing of plan

terms of the level of public services and amenities. An analysis shows that in the settlements that are being formed gradually, mixed zoning is economically advisable. The options cited for intensively developing settlements are of equal value.

In order to heighten the extent of saving in rebuilding, nest and dispersed techniques are used. In settlements characterized by gradual development, these techniques can be combined with selected and successively developing linear rebuilding being carried out along the basic compositional axes. They will designate buildings for demolition that are subject to withdrawal from use (the temporary stock) and only in rare cases, on particularly crucial plots, will they demolish the conditionally supporting housing stock in conjunction with extending the periods of time for this reconstruction.

Practice shows that the actual service life of wooden houses, log and wooden block, provided that they receive suitable maintenance, is 1.5 to 1.8 times that of the calculated service life. This enables one to place the periods of time for the use of such houses on the same footing as the calculated service lives of buildings of ordinary stone construction.

One of the effective organizational and technical means for the resettlement of inhabitants of small villages in a sovkhos (kolkhos) settlement (owing to production necessity or personal initiative) has been based on the transportability of wooden log houses. Depending on the extent of wear and the availability of hoisting and materials handling equipment, a building can be hauled as a whole with only a need to disconnect the stoves and to remove the building from the foundation or with the dismantling of the building accompanied by labeling of the components for subsequent erection in the settlement. When necessary, capital repair, modernization and outfitting of houses with sanitary engineering equipment are performed at the same time. When roads are absent, the hauling of such a house can be done along a winter snow road. We shall also apply the method described when there is a need to arrange the existing built-up area as early as the period of the first line of construction in the most crucial portions of the settlement in regards to compositional factors.

Tracts of individual (and cooperative) residential housing will be created in the main by one-apartment one- and two-story houses of the detached farmstead model. Taking into account the importance of individual construction and the intensive nature of agricultural use of plots adjacent to the house, it would be useful to differentiate in terms of the dimensions of the plots. In order to provide an incentive for individual construction, it is advisable in experimental construction to approve the allocation of plots attached to the house to the individuals responsible for building up the lots with increased dimensions (within the limits of the over-all norm for a detached farmstead land allotment). Such benefits were previously the practice in a number of regions of the country and have yielded positive results.

With the creation of the necessary incentives and with the corresponding material and technical provisions for individual construction, it is possible to count on the reproduction of the existing individual housing stock with the retention of that same form of property or with partial replacement of it by residential housing construction cooperatives. This means that in the plans for rebuilding settlements, sovkhoses can have a share of 50 to 60 percent and kolkhoses, 70 to 90 percent, of their housing in individually or cooperatively built-up areas.

A forecast of the development of the base of the construction industry in the Non-Chernozem Zone of the RSFSR shows that a large portion of residential houses will be erected in completely prefabricated designs, while a smaller portion will be built from brick and wood. In contrast to the city, the demolition of extensive residential areas that have already been built up in the village is not accompanied by a substantial rise in the number of stories in the buildings being erected (and, correspondingly, in the density of available housing) and by the consolidation on this basis of service enterprises and is not linked to the laying of main highways, etc. Essentially, the nature of territorial use is reproduced in the village, in connection with which losses from demolition will not find economic compensation.

The extent of saving resulting from the creation of a public center for the settlement is ensured on the basis of its siting within the limits of territories possessing full public services and amenities and in a point involving a minimum expenditure of time by the population for services and also on the basis of consolidation of public buildings, their possible joining into cooperatives and multi-function use and the stage-by-stage development of the center with a minimum volume of demolition.

When there are intensive and goal-directed manpower flows, the creation (in addition to the public center of the settlement) of a specialized administrative and business center at the juncture of the greenbelt residential and production zones can, in a number of cases, turn out to be advisable. Such a decision is dictated by the need to reduce expenditures of time in the sphere of production management and services for those working there and is determined by the lay-out structure of the settlement, by the concentration of production and by the organization of external transport connections. Buildings for administration, enterprises for public catering and trade, sports grounds and pavilions for bus-stops and halting points for other external transport connections are situated in such a center.

Taking into account the special features of the functional organization of the rural settlement and the lack of considerable transport traffic flow along the streets, as well as the absence of the necessary demographic base and the low density of the population, one must reject a strict regulation of the radiuses for pedestrian accessibility to enterprises for everyday services, as was stipulated by SNiP [Construction Norms and Regulations] II-60-75. The observance of such radiuses leads to a fragmentation of enterprises, an increase in the production cost of services and a deterioration in the quality of services in settlements marked by territorial sprawl and dismemberment.

With the sprawl or dismemberment of greenbelt residential territory (more than 1 km), the creation of structural subcenters in settlements is not economically advisable. Efficiency is ensured under these conditions on the basis of setting up intrasettlement bus runs according to a firmly established schedule to centralized service enterprises.

The structural components of the settlement are linked with the street network, engineering distribution supply lines and off-street pedestrian communications.

The extent of saving in arranging the street network is determined by the total reduction in the length and width of streets and by a rise in the load on them on the basis of consolidating residential formations.

It is advisable to make the differentiation of streets according to their importance and technical characteristics and to earmark the system of pedestrian walkways. The use of intrablock passages, dead-end, group and nest techniques for building up areas and a decrease in the width of plots along the street frontage will not only ensure a reduction in costs for public services and amenities, but will also promote a rise in the linear density of available residential housing. Rational lay-out decisions with the use of dead-end and circular thoroughfares permit one to save up to 20 percent of costs on the installation of the streets.

The following options are possible when through traffic by motor vehicle transport through the settlement is excluded: the laying of a by-pass road (outside the structure of the settlement) or the gradual re-siting of the area that is built up along one side of the highway. When there is intensive pedestrian traffic to objects located along the other side of a busy main motor vehicle highway, in a number of cases it is advisable to stipulate the construction in the future of an underground pedestrian crossing in coordination with the overall lay-out structure of the settlement. In connection with this, side streets are arranged parallel to the main motor vehicle highway to serve as duplicates thereof to handle local traffic.*

Unfortunately, similar solutions are not encountered in plans for rebuilding rural settlements; the calculated period of time therein for their implementation being 25 to 30 years. It is not difficult to calculate that with an estimated cost of one cubic meter of underground pedestrian passageway ranging from 210 to 630 rubles (depending on geological conditions), the total costs for its installation will amount to 25,000 to 75,000 rubles, which can turn out to be several times less than losses connected with the demolition of areas built up in terms of capital construction or with costs for changing the route of the main motor vehicle highway.

The maintenance and priority of work on engineering equipment and exterior civic improvements on territories being rebuilt are determined by the over-all trend and techniques of reconstruction and by the rate of construction. It is advisable to introduce centralized systems and main installations of engineering equipment and, first of all, the heat supply and the sewage system, by stages, in keeping with the increase in the loads.

* In particular, such a solution was envisaged by the author in a plan for the rebuilding of the Nikol'skoye settlement in Moscow Oblast; an underground passage under a road in Category Two would ensure a link between the settlement and a tract built up with residential housing and an architectural monument from the 18th century.

The following systems are used for sewage for lowrise houses depending on geological conditions (by apartment or by groups): sump, septic tank, fields of sub-soil irrigation or fields of underground filtration.

For heating it is advisable to provide for apartment-by-apartment systems: automatic water heaters with the use of solid fuel, gas or electric power. The delivery of water to the house can be performed by an electric pump from the nearest well or artesian well. Practice has shown that with this solution, the expenditures on sanitary engineering equipment can double, reaching 20 to 22 percent of the estimated cost of the house. But, all the same, a saving on the costs of construction of the main installations of the engineering equipment (of the boiler room, purification structures) and of centralized networks will be ensured.

Finally, it is advisable to do the implementing of exterior civic improvements during the rebuilding of the settlement with the manpower forces of the sovkhoses and kolkhoses and of the individuals who themselves are building up the plots. One can enumerate among these activities the grading of streets, the laying of road surfaces, sidewalks, minor forms of architecture and the planting of greenery on the territory. For road construction, prospecting locally for nonmetallic minerals is required, as well as the delivery to farms of ballast, cementing materials, precast reinforced concrete and equipment. An effective measure of the rebuilding of the village can be found in the importance attached to such work that depends on initiative. For, as you see, the strain on the intersectorial balance of labor does not permit one to count in upcoming years on a further increase in the detachment of construction workers. The participation in the jobs by those individuals who themselves are building up the plots during the period of time between seasonal field work must be viewed as an additional recruitment of human resources into the sphere of construction without doing harm to other sectors of the national economy.

Practice testifies that in those places where kolkhoses and sovkhoses are themselves actively participating in the work of rebuilding villages, positive results are achieved over a short period of time. This is demonstrated in particular by the settlements at hundreds of farms that have been decorated with certificates at All-Union Reviews and Competitions for the best lay-out, building up and public services and amenities in the village.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

BUILDING MATERIALS PRICING IN BELORUSSIA CRITICIZED

Minsk SOVETSKAYA BELORUSSIYA in Russian 13 Jul 70 p 2

[Article by P. Ivarovskiy, Deputy Manager of Construction Trust No 8 (Brest): "Brick, Quality and Savings"]

[Text] Right now each enterprise and each construction organization is striving to improve output quality. The Brest Building-Materials Combine, which produces brick, has achieved notable successes in this matter. In recent years the grade of brick at the combine has been raised.

It would seem that such successes would make the builders glad, but actually another impression is being received. Design documentation calls for less than 70 percent of grade 75 brick. When receiving brick of an excessively high grade, the builders overpay large sums. Thus, in 1979 one construction trust, No 8, overpaid more than 30,000 rubles. A paradox arises: the builders are erecting buildings and structures of the best brick, and they are making the buildings stronger and of higher quality, but instead of getting a morale or material benefit, they suffer losses and they lose profit and economic-incentive funds.

It is natural that clients should pay the appropriate price for buildings made of better brick. They do not object, but Belorussian SSR Gosstroy has not prepared new price lists for budget-estimate pricing.

Matters are still worse with reinforced-concrete articles because of a change in transport schemes. Nor has Gosstroy revised the budget-estimate prices for reinforced concrete.

But there is still one more problem about brick. According to the specifications, 10-15 percent of all masonry must be made out of full brick (for making smokestacks and ventilation conduits, masonry under window sills, partitions in quarter brick, and so on). Construction Trust No 8 made selections from the designs and ordered full red brick from the Brest combine, but the latter did not conclude the agreement--Belorussian SSR Ministry of Construction Materials Industry did not include the production of this output in the plan. Right now the builders are compelled to make even partitions out of cored brick. With mechanized plastering much mix goes into filling the voids during finishing work. And

how much cement and lime is consumed instead of clay? According to comparative calculations, an approximate 600 extra cubic meters of mortar will be consumed in our trust alone in 1979.

Such errors have led to additional expenditures of scarce materials, lime and cement, which, incidentally, are made by one and the same Ministry of Construction Materials.

In my view, Belorussian Gosstroy should revise the price lists for budget-estimated prices, especially for brick and reinforced concrete, and the Ministry of Construction Materials should plan for the output of full brick, which cannot be dispensed with today.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

CONSTRUCTION MATERIALS INDUSTRY PROGRESS, PROBLEMS CITED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Aug 79 p 2

[Article by A. I. Yashin, USSR Minister of the Construction Materials Industry: "Reliability and Beauty"]

[Text] Capital construction is one of the basic links in the socialist economy. The state of affairs in it has a decisive influence on development of the entire sphere of physical production and the rise in the Soviet people's standard of living. For this reason, the party and the government attaches paramount importance to improvement in the organization and technical level of construction and to every possible reduction of the periods to establish new capacities and assets. In the recently approved CPSU Central Committee and USSR Council of Ministers decree "On improving the planning and reinforcing the influence of the economic mechanism on improving production efficiency and work quality," measures which must be taken this year and in future years to radically change the state of affairs in capital construction were defined with exhaustive completeness.

Workers of the building materials industry, which is the foundation of construction, figuratively speaking, play an important role in the solution of these vital tasks. The industrial standard [uroven' industrial'nosti] of construction, improvement in quality, and reduction of labor input depend entirely to what extent the materials, structures and components of plant manufacture being used are up-to-date and efficient.

A highly developed building materials industry has been established in our country. We now produce more than one and a half times as much cement as the United States. The Soviet Union also leads in world production of asbestos cement products (shingles, pipes), plate glass, precast reinforced concrete, wallboard [stenovyye] and certain other materials. The output of building ceramics, roofing material, linoleum, and sanitary engineering equipment has been significantly increased in recent years. This has made it possible to improve the provision of construction sites with basic materials. In order to more completely meet requirements of the country's eastern regions, where intensive construction is in progress, large enterprises of the industry have been built in the Far East, Siberia, the Urals, and the republics of Central Asia.

The industry's principal tasks under the five-year plan were defined by the basic directions for development of the national economy of the USSR for 1976-1980, which were approved by the CPSU 25th Congress. They amount to the fact that it is necessary to expand output of new construction materials, efficient prefabricated structural elements, light and economical large-sized structures and products of improved quality with a high degree of plant finishing which ensure a rise in the standard of industrialization, reduction of materials consumption and construction cost, as well as the durability, comfort and architectural expressiveness of buildings and installations.

A great deal has been done in this direction since the beginning of the five-year plan. Production of quick-setting and high-grade cement has been significantly increased. Their use makes it possible to sharply shorten the cycle of manufacturing reinforced concrete products, lighten their weight, and increase durability properties. Marked improvement has been made in the product mix of the asbestos cement industry. Enterprises of this subsector were changed over after retooling mainly to produce shingles of increased size. This provides considerable savings in materials and labor input in the construction process. Production of corrugated structural sheets for roofs of industrial and agricultural buildings, as well as large-sized flat sheets, is increasing at a rapid rate. The output of high-pressure asbestos cement pipes 5 to 6 meters long for hydroeconomic construction is being expanded.

Fused roofing material [naplavlyayemyy ruberoid] and new types of roofing material--with a fiberglass foundation, perforated and with ozone-resistant polymeric insulation [s ozonostoykim polimernym pokrytiyem], and materials utilizing aluminum foil--have been put into production and are being turned out in significant quantities at roofing and waterproofing materials plants, taking the needs of construction into account. Many new, effective products are being provided to projects by glass industry, building ceramics, and sanitary engineering equipment plants. It is enough to say that about 3.5 million square meters of special-shape glass [profil'noye steklo] and stekor (glass with a box section), which have been widely accepted by builders, are now being turned out annually.

It must be mentioned, however, that the output of certain effective materials still is not entirely adequate. The volume of their production at present cannot have a substantial effect on improving the industrial standard and quality of construction. Construction workers are receiving little ornamental cement, finishing glass, and articles with a foundation of mineral fibers intended mainly for heat and sound insulation. Construction workers' complaints that they lack porous aggregates for concrete, clay and silica facing brick, and textured [ofakturennyye] wall slabs out of non-cement cellular concrete are justified.

Until recently, the production of gypsum and economical gypsum products, the use of which makes it possible to sharply reduce labor-intensiveness and the length of time for internal finishing of buildings, has been unjustifiably slow. Now measures have been specified by the ministry to provide for a significant increase in the output of gypsum concrete rolled panels for partitions, floor foundations, dry gypsum plaster and gypsum board of improved quality, wall blocks [stenovyye bloki], and other products. Solution of this task requires the combined efforts of a number of ministries which have jurisdiction over enterprises of the gypsum industry, as well as acceleration of the development of technical specifications by organizations of the USSR Gosstroy for broader use of gypsum products in construction.

Our ministry has large capacities at its disposal for the production of many polymeric materials--linoleum of various types, cellular plastics, adhesive compounds, washable wallpaper [moyushchiyesya oboi], sealers [germetiki], and the like. But the capacities are not filled because of the lack of synthetic resins and dyes. A positive solution for this problem has not been found for many years now. And how many times do we put before planning and supply organs the problem of searching for opportunities to increase deliveries of chemical raw material for the production of polymeric materials which provide economy in labor and resources in construction.

The building materials industry has grown significantly in recent years, and has been replenished with large-scale industrial enterprises. Valuable experience in retooling capacities in operation, in improving cement and ceramics production technology, and in setting up large-scale mining and processing combines has been accumulated. At present, our enterprises already employ over 36,000 workers who are working under 1980 accounting; of this number, 7,000 leading production workers have fulfilled personal targets for the 10th Five-Year Plan.

Nevertheless, large unused reserves still remain in the industry to increase production and improve its efficiency. Primarily, we see in this the reasons for nonfulfillment of the semiannual plan for the output of many types of materials. There are still enterprises which do not systematically cope with plan targets because of serious deficiencies in production organization, violations of industrial and labor discipline, poor equipment maintenance, breakdowns, and idle time. Losses caused by slow assimilation of newly introduced capacities are great. Much output is being underproduced by plants commissioned at the beginning of the five-year plan which are operating with low technical and economic indicators: silica brick plants in a number of oblasts of the RSFSR and the Ukraine; the Gremyachevskiy and Chinazskiy quarries and crushing and sorting plants; the Pavlodarskiy and Cherekhovskiy roofing materials plants; and new manufacturing lines for producing cement by the dry method at the Maragandinskiy and Navoiyskiy cement plants.

Measures have been developed and are being implemented by the ministry to improve the operation of enterprises which permitted indebtedness in the production and delivery of products in the first half of the year. At the same time, a situation in which raw material is not delivered to plants on time and finished products are not shipped because of the lack of transportation cannot be considered normal. Now, at the best time for construction, many projects are experiencing an acute shortage of cement. But above-normal surpluses of it at our plants have exceeded 100,000 tons. The lack of railway cars is depriving many enterprises of the opportunity to establish the necessary stocks of raw material and fuel for continuous operation in the forthcoming fall and winter period.

Further development of our industry requires an increase in its production capacities, especially in the non-chernozem zone of the RSFSR and eastern regions, intensified construction of housing, preschool institutions, vocational and technical schools and other projects needed to improve living conditions at enterprises and provide them with personnel. We hope that managers of construction and installation organizations, in realizing this, will take drastic measures to speed up operations at the industry's projects. Fulfillment of the plan for the current year and creation of conditions for successful operation of the industry in the future, final year of the five-year plan depend to a considerable extent on full and high-quality implementation of tasks in progress and timely commissioning of projects under construction.

Workers of the building materials industry and builders have one principal task, one overall target--to bring about significant improvement in the state of affairs in capital construction. The combined creative efforts aimed at resolving this task are a guarantee of a further upswing in the technical level of construction production and improvement in its quality and effectiveness.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

IMPORTANCE OF CONSTRUCTION INDUSTRY DEVELOPMENT NOTED

Moscow STROITEL'NAYA GAZETA in Russian 12 Aug 79 p 1

[Article by A. Deminov, first deputy chairman, USSR Gosstroy: "Builders"]

[Excerpts] Our holiday--Builders Day--is a sign of national appreciation for the labor of the army of many millions of Soviet construction workers. For the labor of the people who have a leading role in carrying out the state programs for development of the country's productive forces and for increasing the well-being of the Soviet people. And the Motherland places a high value on the services of construction workers. Many of them have been awarded the titles of Hero of Socialist Labor and are winners of the Lenin Prize and the State Prize of the USSR, as well as the USSR Council of Ministers Prize. Thousands of leading workers are awarded orders and medals every year.

This year Builders Day is special; it coincides with the 50th anniversary of the approval of the First Five-Year Plan. The amount of capital investments in the national economy is increasing from five-year plan to five-year plan. As an example, while they amounted to 493 billion rubles in the Ninth Five-Year Plan, we must assimilate 621.4 billion, or one-fourth more, in the present five-year plan. But what does assimilate mean? To begin with, this is putting into use fixed capital of nearly 620 billion rubles, or a third more than in the Ninth Five-Year Plan. It is notable that the rate of introducing fixed capital now is overtaking that of capital investments, and according to the results of 3 years of the current five-year plan, the growth rate of national income produced is higher than the growth of capital investments. This positive trend also must be reinforced for the future.

We must put more production capacities into operation in all sectors of the national economy more rapidly. And here is something to be proud of. In three and a half years, more than 700 large-scale special-purpose enterprises, the capacity and extent of technical equipment of which in many cases exceed similar production in capitalist countries, have been built.

The Zaporozhskaya and Urelegorskaya GRES's [State Regional Electric Power Stations], the largest in Europe; the Ust'-Ilimskaya GES [Hydroelectric Power Station]; the powerful units at the Kurskaya, Chernobylskaya and other AES's [Nuclear Electric Power Stations]; the "Bogatyr" coal pits in Kazakhstan; and dozens of the other largest projects of heavy industry have been built under the 10th Five-Year Plan.

Much has been done to establish modern enterprises to produce consumer goods and to reorganize agriculture. We are justifiably proud of the immense scale of housing construction. I would remind you that during the 10th Five-Year Plan nearly 323 million square meters of living space, or about 6.3 million well-planned apartments, have been built through all sources of financing. This means that 32 million persons have celebrated a housewarming. General education schools to accommodate 4.4 million pupils, kindergartens and nursery schools for 1,702,000 children, and hospitals with 194,000 beds have been put into operation. The comfort of apartments is continuously being improved through extensive use of standard plans with improved planning, the use of modern finishing materials, and, of course, by virtue of better work quality.

In the current year significant capital has been directed at developing the fuel and power industry, the chemical and petrochemical industries, metallurgy and its raw material base, and machine building, which ensures more rapid renovation of metal-working equipment, of agriculture and industries connected with it, and of railway transport.

In order to carry out the vast construction programs more successfully, the building materials industry and the construction industry must be developed ahead of schedule. Large-scale interoblast construction industry enterprises such as the Chelyabinsk Shaped Construction Planking Plant, the Krasnoyarsk Combine of Industrial Structures for Wooden Houses, and others, have appeared on the map of the country. The construction base is being extensively developed in the Non-Chernozem Region, Western Siberia, in the BAM [Baykal-Amur Trunk Line] region and other remote areas where new cities, settlements and enterprises are growing up. A larger and larger share of the total output of precast reinforced concrete is being assumed by advanced products out of high-strength, light and cellular concrete, as well as prestressed structures. Large-scale production of dry gypsum plaster on a new technical basis, asbestos cement extrusion structures for buildings' walls and roofs, and finishing materials in sheet form processed by the direct press method [metod pryamoy pechati] has been begun.

Leading collectives are making a weighty contribution to improve the construction and building materials industries. The experience of Muscovites is especially valuable. They are continuously improving techniques and processing methods, expanding and updating their product mix, and improving their quality. At the VDNKh USSR [Exhibition of USSR National Economic Achievements] one may now familiarize himself with hundreds of

samples of the products of enterprises and organizations of the Glavmospromstroymaterialy [Main Administration of the Building Materials and Structural Parts Industry of the Moscow Gorispolkom] combined in the "Construction Materials of Moscow" display. A broad range of high-quality products out of gypsum, wood, marble, ceramics, concrete, glass, asbestos cement, polymers, different paints, enamels, sealers, and so forth is represented in it. Special sections have been devoted to the new form of planning and evaluation of enterprises' activity in standard net production, introduced 4 years ago in the glavk [Main Administration], as well as measures to reduce materials consumption in production and to save manpower resources.

Nevertheless, there are still many deficiencies and unused reserves in construction. In order to eliminate them, to make up for things that have been neglected, much must be reorganized in our work. The principal lever in this is an increase in the rate of scientific and technical advancement in construction. To begin with, attention should be directed at further industrialization of construction production, at transforming it into a continuous process of fully mechanized assembly and installation for buildings and construction with prefabricated components, the use of new advanced types of industrial buildings, the establishment of modern construction industry enterprises, and improvement in the extent to which construction is equipped with machinery and mechanized tools.

In accordance with the decree a special subunit--Glavstroynauka [Main Administration for Scientific Research Work and Introduction of New Technology]--was established in the Gosstroy organization. Its mission is extremely important. It has been charged with radically improving work to manage research and introduce the achievements of science and technology in construction practice.

The personnel, the people are the golden asset of construction production. Thanks to their selflessness, creative initiative, and mass socialist competition, the industry is developing successfully. In recent years many patriotic initiatives have been widely disseminated. The competition of workers in accordance with the principle of "Working Relay" assumed nationwide scope. With its assistance, capacities were put into operation at Atomash [expansion unknown], the Novolipetakiy Metallurgical Plant, at mineral fertilizer plants, and in construction of the BAM ahead of schedule.

An outstanding initiative was begun in Sverdlovsk: "The five-year target of the brigade with less personnel!" This initiative during a personnel shortage demonstrated a very reliable path to a solution of the problem.

At the Vinnitspromstroy [expansion unknown] combine, an effective form of improving construction management was found. The multiple-skill brigade contract at the Tallin DSK [house-building combine] has proved to be excellent. Construction workers are successfully applying the initiative of Rostov workers: "Not one person lagging next to you," Orlov workers' "no interruptions," and other valuable undertakings.

Competition in the collectives of planning and surveying and scientific research organizations, which bring together tens of thousands of specialists, has been widespread. The aim of this movement is high quality of work from plan to finished product.

Let us look at the map of projects in progress in 1979. Power workers and machine builders, miners and metallurgists, chemists and agricultural workers, and all sectors of the national economy are waiting for new capacities to be put into operation. They are hopefully watching the builders, in whose hands is the key to progress in the country's economy. Our duty is to justify this hope, to carry out the motto of the fourth year of the five-year plan "Build everything that has been planned on time."

On Builders Day the working people of the Motherland warmly congratulate the detachment of many millions of construction workers, building materials industry workers, and construction industry workers, and planning and scientific research organizations on their occupational holiday and wish them great new successes in their life and work.

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CONSTRUCTION, CONSTRUCTION MACHINERY, AND BUILDING MATERIALS

PROGRESS IN PROMOTING INDUSTRIALIZED BRICK STRUCTURE OUTLINED

Moscow STROITEL'NAYA GAZETA in Russian 22 Aug 79 p 3

[Article by N. Kachalov, Deputy Chairman of USSR Gosstroy: "Let Brick Structure Be Used"]

[Text] The question of building up the production and making wide use of brick panels and blocks in construction, which STROITEL'NAYA GAZETA has discussed, touches upon an important problem. The industrialization of construction by the use of brick means not only a sharp rise in labor productivity but also an improvement in quality and a reduction in materials intensiveness.

The country produces almost 48 billion bricks per year. This figure will not be reduced in the future. About 42 percent of the housing and public buildings and 50 percent of the industrial buildings under construction today are being built of brick and stone. But manual bricklaying in the erection of building walls occupies only 500,000 workers.

It is no secret that apartment houses made of brick enjoy high demand on the part of the populace. Moreover, data about total consumption of fuel for the manufacture of brick and of reinforced-concrete panels, including the production of cement and the steam-curing of panels, indicate that about 15 percent less fuel is consumed for brick structure. A considerable saving of building materials also is achieved.

Therefore, there is great attention to the problem of industrializing construction work with brick and stone on the part of the engineering and scientific community. Thus, a large number of letters has come to the editorial office in response to the article, "The Fate of Brick Panels." The newspaper has published only a portion of them. USSR Gosstroy has reviewed the others.

True, some writers do not assess the state of affairs objectively. For example, an article by Comrade Khar'kov noted that the coordination plan for the Tenth Five-Year Plan that USSR Gosstroy worked out was not mandatory for fulfillment and, therefore, proved to be ineffective. One can scarcely concur with this unconditionally. In recent years of the

five-year plan, substantial scientific research has been conducted, and full-scale experimental designs for industrial lines for the manufacture of industrialized vibrated brick structure have been worked out and implemented. Designs for experimental buildings made out of such panels or blocks also were created for housing, public-building, industrial and rural construction. A feasibility study of the introduction of industrialized brick structure was made. In brief, the coordination plan played a positive role at the given stage.

Nor can it be asserted that industrialized structure and articles made of brick and small stone are not being introduced at all in our country. Five years of experience in the erection of industrial buildings in Leningrad (Trust No 36 of Glavzapstroy [Trust for Construction in the Western Economic Region] of USSR Minstroy [Ministry of Construction]) is an example. Definite experience has also been gained in the Ukrainian SSR. Industrialized vibrated brick panels and blocks are being used widely in Uzbekistan, Kirgizia and Kazakhstan.

Another point is that the framework of application for such structure is not large yet. Today only about 150 million bricks are being consumed per year in the country for making industrialized structure.

Many writers, including Comrades Lotovchenko, Tikhov and others, consider that only where there is a radical restructuring of the whole brick industry can construction be industrialized by the use of brick and stone. It goes without saying that restructuring of the work and improvement in the quality of the output of the enterprises that produce brick are among the primary tasks of the building-materials industry. Right now a large number of plants are producing brick and stone that do not meet the requirements of the standards. This, understandably, also complicates the creation of universal automatic bricklayers for the manufacture of panels and blocks.

The brick industry is being reequipped at a good pace. But this does not mean that it can continue to remain at the same level in matters of the industrialization of brick construction in the expectation of better times. The more so since domestic and foreign experience indicates that the development of automatic machinery for laying brick of nonstandard sizes is a completely feasible task. Moreover, economic calculations of NIIES [Scientific-Research Institute of Construction Economics] of USSR Gosstroy indicate that even when bricks are laid in molds manually, the work force requirement at the construction site is reduced to one-fifth to one-seventh. Taking labor expenditures for the preparation of this structure at the enterprise into account, it is reduced to one-third to one-fourth. Therefore, brick can be laid in the molds manually in the first stage, especially under casting-yard conditions, and in plant departments this process is being automated gradually.

Certain writers propose that we be oriented toward foreign technology for manufacturing industrialized ceramic structure, the acquisition of licenses and equipment and so on. But to be oriented toward foreign technology

is undesirable, since there is but a comparatively small number of firms that make brick and ceramic structure and articles.

The principles of the masons' work abroad are based, as a rule, upon complicated automatic systems. Their use in our country, where a multitude of brick plants is scattered over a vast territory, would lead to the creation of an additional specialized repair and setting-up service, and for this purpose large capital investment, experienced personnel and expensive machinery would be needed. At the same time, our specialists have worked out adequately effective industrial processes for producing vibrated brick structure. These do not require large capital investment, and the operating equipment is not complicated to manufacture and is relatively inexpensive.

In the articles that have been published, much was said about the revival of past experience, including the use of designs 20 years old. Of course, experience that has been gained must be considered. But one must not forget that scientific and technical progress has greatly changed the technology for manufacturing industrialized brick structure and for erecting it.

Past attempts to convert brick and stone work to the industrialization rails were not widely developed because of a number of organizational and technological oversights. The quality of the designs for buildings and structures was not high, and reliable structure for the jointing of panels and blocks was lacking.

Enterprises that produced this output were not motivated to expand panel and block production. Tasks were not established for them. Primarily, it was required that more individual bricks (the planned output) be produced and sent to the builders. But the builders, who received the main savings in work force from introducing brick panels, could not influence the producers, since they were under other agencies. It was necessary to overcome bureaucratic contradictions.

Measures are now being taken to introduce industrialized structure made of brick and stone widely into construction practice. USSR Gosstroy has developed a draft of an integrated program of work to develop this production during the next five-year period.

The draft of it, which was worked out to take the experience gained into account, calls for the issuance of technical documentation for experimental and large-scale construction of housing and of production buildings. The construction of departments for producing industrialized structure made of brick and stone is called for. Under this program, Minstroydormash [Ministry of Road, Construction and Municipal Machine Building] organizations should undertake the serialized output of automated equipment for the industrial lines that will manufacture such structure and articles, beginning with 1983, and large-scale construction of buildings and structures in accordance with standard designs can be undertaken beginning with 1985.

Scientific-research, design and experimental work on this subject is to be completed in 1979-1980. Thus, in 1979 TsNIISK [Central Scientific-Research Institute of Constructional Structure] imeni Kucherenko and TsNIIEP zhilishcha [Central Scientific-Research Institute of Standard and Experimental Design of Housing] have prepared and coordinated drawings of panels made of ceramic stone and whole brick. Recommendations for the factory manufacture of brick panels and blocks have been developed and will be published soon. Construction with the use of industrialized brick panels has been publicized also in the appropriate chapters of SNiP [Construction Norms and Regulations].

Soyuzgiprostrom [All-Union State Institute for the Design of Building Materials Enterprises] of USSR Ministroymaterialov [Ministry of Construction Materials Industry] will publish working drawings for a department that will manufacture brick-wall articles. Construction is to be accomplished this year by Taldykurganpromstroy [Taldy-Kurgan Trust for the Construction of Industrial Enterprises] of Kazak SSR Mintyazhstroy [Ministry of Construction of Heavy Industrial Enterprises]. In 1979 NIISMI [Scientific-Research Institute for Building Materials and Articles] and Ukrniistrom-proyekt of UkSSR Ministroymaterialov will complete the development of flow-line technology for the production of wall panels made of ceramic stone. It is to be introduced in 1980 at the Podol'sk Wall Materials and Structure Plant in Kiev.

It must be emphasized that the industrialization of construction with the use of brick is especially important in seismic regions with a hot and dry climate. The quality of manual bricklaying under these conditions is low in monolithicity indices and does not meet standard requirements for earthquake-resistant construction. Buildings made out of vibrated brick panels that are produced with clay and silicate brick are completely earthquake resistant. Because of this, the draft of the work program for the Eleventh Five-Year Plan calls for the development of experimental and standard designs for modern earthquake-resistant buildings and for the construction thereof in cities with seismicity of forces 7-9.

Moreover, USSR Gosstroy has prepared the draft of a directive, "Development of the Production of Industrialized Structure Made of Brick and the Wide Use Thereof in Construction." This draft was sent a couple of days ago to concerned ministries and agencies and Union-republic councils of ministers and gosstroys for evaluation.

Construction ministries and agencies and the managers of construction trusts and building-materials industry ministries should view this work as an additional major state step.

In designs for industrial construction, it is desirable to call for the erection of vibrated brick panels instead of walls and partitions made of individual brick. Regional construction organizations should create special departments for this purpose.

In considering our country's expanse and the large number of relatively small brick plants, evidently it is also desirable to establish casting yards for local use in order to eliminate long-distance hauling of panels. This will increase the pace and effectiveness of construction, especially in rural areas. When necessary, it will be possible to get bank loans for the construction of specialized brick-plant departments. Where it proves to be desirable, special combines for the manufacture of structure made of brick and stone and the erection of apartment houses made therefrom should be established in both cities and the countryside.

USSR Minstroyaterialov, with the involvement of the appropriate organizations, must work out economic-incentive measures for enterprises that convert to the output of industrialized brick structure. Planning, reporting and evaluation of the activity should be conducted in a way that will motivate the collectives to industrize brick production.

Unfortunately, there is still an attitude that regards brick as a wall material that does not correspond to the modern epoch of scientific and technical progress. Brick, of course, is not the guilty party here; it is the inertia of some managers of the building-materials industry and of design organizations. After overcoming this inertia, we will take a new step toward the output of highly effective brick blocks and panels that have a high degree of factory preparation.

It is the job of ministries and agencies and of local party and soviet organs not to set up one wall material (brick) in opposition to another (reinforced concrete) but to combine them skillfully for diverse conditions and circumstances.

In conclusion, I would like to hope that STROITEL'NAYA GAZETA and the construction journals will continue in the future to follow up on developments in the industrialization of brick construction, publicizing the advanced experience of organizations that are working in this area.

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